

INDUSTRIAL NEWS DIGEST

Vol 3, No. 1, 1980





INDUSTRIAL NEWS DIGEST

Volume 3 Number 1 January 1980

Editor: S.K. Nag
Asst Editor: V.K. Sharma
Ed. Asst.: Madhu Bala

The *Industrial News Digest* is a monthly bulletin brought out by the Industrial Information Service of PID as a part of its activities. The *Digest* provides condensed technical and techno-economic information for industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

The other activities of the Industrial Information Service are described overleaf.

SUBSCRIPTION RATES

Annual : Rs 20.00/£ 4.00/\$ 8.00

Single Copy : Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O./Cheque/I.P.O. payable to "Publications & Information Directorate (IIS)" should be sent to the Editor, *Industrial News Digest*, Publications & Information Directorate, Hillside Road, New Delhi 110012.

CONTENTS

Miscellany	1-2
Industry Profile	
Power Driven Pumps	3-4
Industrial News	
New trends in India's exports, Licensing for small units, Questionnaire on exports, Changes in import policy, Industrial unrest	5-7
Engineering export strategy, Leather splitting machine, X-ray image intensifier, Filament win- der, Tablet counting machine, Heat exchanger, Distillation still, Ink drawing pen, Wire and tube drawing lubricant	7-9
Industrial alcohol, Zinc phos- phate, Synthetic green pigment, Coal gas plant, Furfural project, Enamel	10-11
Silk exports, Plastic tyre, Synthetic diamond, Asafoetida tablets, Paper from tea leaves	12-13
Trade Enquiries	14-15
Announcements	
Awards; Exhibition & Fair; India-China Chamber; Symposium & Workshop; Publications	16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate (CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

Technology and Foreign Trade

According to Dr John Stopford, Professor of International Business at the London School of Business, India's bid to attain self-sufficiency in technology was the result of a "misguided policy." Dr Stopford, who visited India during September 1979, saw technology as a major driving force in world trade. As such, he was of opinion that countries like India should effectively combine imported technology with their own research efforts to create an export base.

Dr Stopford felt that developing countries should try to export more to the south rather than expend too much effort in selling to the more industrialized north. The recent trend of protectionism in the developed countries according to Dr Stopford, would finally prove to be self-defeating. He said that the fear of closure of industries, shrinkage of employment, import penetration and fall in exports—the main reason behind protectionism—is mostly unwarranted. He also made the interesting observation that the developed nations are afraid that 20 more Japans might emerge in the near future, knocking out many of their industries.

Tribology

Tribology has nothing to do with the study of tribes. The term was coined more than 10 years ago to define the study and science of friction, lubrication and wear. Since then this branch of technological study has made considerable progress. However, tribology is neither a new science and nor it is founded on a breakthrough into new fields of knowledge. It is an interdisciplinary science composed of sciences like physics, mathematics, engineering, metallurgy and chemistry. It has been found that proper application of tribology to industry can result in considerable savings. This is particularly relevant to the modern industrial demand for economy and efficiency. An estimate made during the mid-seventies put the savings effected by the British industry through applications of tribology at £850 million/yr. Most of the savings arise from savings in maintenance and replacement costs and the prevention of breakdowns. These savings often stem from improved design, but they also arise from the careful selection of materials for tribological applications and better monitoring of the condition of machinery.

A New TV—Lean and Flat

A beautiful painting hangs on the wall. The housewife turns it backside front and, wonder of wonders, it becomes a TV receiver. A pipe dream? An odd desire? At the moment, yes. But electronics engineers are at the task of making such a flat TV a reality.

Already Japanese TV giants like Sony, Hitachi, Sharp and Matsushita have come out with prototypes of small flat-screen TV sets using exotic new displays like liquid crystals, thin-films of transistors and the so called electroluminescent

panels. None of the firms has, however, put one into production. Taking the cue from its Japanese counterparts, a small British firm, Sinclair Radionics, has found a way to squash a cathode ray tube flat and has arrived at a pocket TV set which has a 3-inch screen and is only three-fourth of an inch thick. Besides its diminutive size, the Sinclair pocket TV has the advantage of projecting a image which is brighter than that of a normal set. Consumer acceptance and production cost (Sinclair wants to market it at less than \$ 200 a set) are two hurdles the pocket TV has to cross.

The Industrial News Digest
wishes its readers a
happy New Year.

INDUSTRY PROFILE

POWER DRIVEN PUMPS

The Indian pump industry has developed remarkably in the last three decades. Pumps are manufactured not only to handle water but also all types of fluids under various conditions of temperature and viscosity. Besides meeting the indigenous demand, the industry has established a good market abroad. It produces tailor made pumps to satisfy diverse needs of industries. Indian pumps are available for irrigation, water supply, construction, mines, refineries, chemicals and petrochemicals, industry, steel plants, power generation, sugar, and paper and pulp industries.

Capacity & Production

There are at present 53 manufacturing units registered with DGTD with an installed capacity of 5 lakh pumps including 14,000 process pumps. Centrifugal pumps upto 4" x 4" dia. are reserved for manufacture in the small scale sector. More than 400 units in the small scale sector registered with various State Directorates of Industries are engaged in the manufacture of pumps.

The present annual production of pumps in the organised sector is 3.5 lakhs. There are four units in the organized sector which manufacture process pumps. Their production in 1977 was 4,000 only. The combined output of both organized and small sector exceeds 7 lakhs/yr.

The types of pumps manufactured in the country today include, centrifugal, multistage, radial and mixed flow, non-clog, split case, self-priming, axial flow, vertical turbine, submersible, rotary, reciprocating, diaphragm, gear and monobloc pumps.

Some of the complicated and highly sophisticated pumps required for atomic plants and condensate and cooling water pumps for large thermal power generating plants are also included in the present range of manufacture. The industry is capable of manufacturing pumps with very large capacity of the order of 1,500 mm for a discharge of 3.6 lakh litres per minute or even higher.

Research & Development

The industry has been able to develop a technology base mainly because of its research and development activity and innovative attitude. Leading manufacturers in the country have established their own modern, well-equipped R & D centres for original product design and development. There are a number of small scale units which cannot afford to spend huge sums for R & D efforts. With a view to helping these units and young entrepreneurs, the Indian Manufacturers' Association is formulating plans for setting up an institute for research in hydraulics.

Future Scope

The demand for process pumps required by fertilizer and chemical industries was estimated as 14,000 in 1978-79. Schemes have been already licensed for the

manufacture of process pumps for a capacity little over the estimated demand. The present installed capacity of this sector is around 6,500 pumps/yr. It is estimated that capacity likely to materialise out of all the approved schemes including the present installed capacity would be of the order of 12,000 pumps/yr in respect of process pumps and high pressure pumps. Manufacture of special types of process pumps, not yet being produced in the country, affords scope for diversification of old units or setting up of new units or foreign collaboration.

About 95% of pumps manufactured in India are used for agricultural and irrigation purposes. The capacity already available in large and small sectors leaves no scope for expansion for irrigation pumps.

Exports

The Indian pump industry exports various types of pumps to more than 65 countries of Asia, Africa and Europe, and to Australia and New Zealand. Exports are, however, confined to pumps for irrigation purposes. The export value has increased from Rs 250 lakhs in 1964-65 to Rs 750 lakhs in 1977-78.

TABLE 1—IMPORT OF PUMPS

(Val. in Rs lakhs)

1974-75	360
1975-76	350
1976-77	n.a.
1977-78	2515

Imports

Process pumps for certain special applications are imported mostly along with complete process plants. The latest technical know-how for the manufacture of condensate pumps is also being imported. Import figures of pumps for the recent years are given in Table 1 [*Commerce*, 1979, 139(3563), Suppl.; *Guidelines for Industries*, 1978-79, 76].

INDUSTRIAL NEWS

GENERAL

New Trends in India's Exports

The World Trade Department of Indian Chamber of Commerce, Calcutta, in a survey released recently, has highlighted several important and interesting trends in India's export trade. It has said that the exports of gems and jewellery were valued at Rs 4,627 million in 1977-78 compared to only Rs 2,642 million in the previous year, an increase of 77%. Diamond exports went up by over 88% from Rs 2,310 million in 1976-77 to Rs 4,352 million in 1977-78. Diamonds accounted for 93% of all gems and jewellery exports in 1977-78. Substantial increase in exports was achieved also by pearls (14.64%), gold jewellery (116.93%), non-gold jewellery (29.75%) and synthetic stones (35.91%). In 1978-79, the exports of these items continued to show highly encouraging results. In April-August, 1978 they were valued at Rs 2,132 million compared to Rs 1,573 million in the similar period of 1977, an increase of 36%.

Export of capital goods recorded a notable increase in 1978-79. During April-December, 1978 the value of these exports was Rs 180.44 crores compared to Rs 138.26 crores in the same months of the previous year. The contracts for these items as at the end of January 1979 were Rs 812.6 crores. These included steel structurals, industrial plant and machinery, and vehicles.

The export of railway equipment also showed encouraging results in 1978-79. Fifteen metre gauge diesel electric locomotives and spares were supplied to Tanzania. Besides, exports were made of 30 coaches to Philippines, 20 to Uganda, 48 to Taiwan, 50 to Vietnam, and 4 to Nepal.

Among other new developments were the export of boilers, painting and drying booths to USSR, electrical poles to Abu Dhabi, lighthouse equipment to Malaysia, and fence items to USA. New markets for various types of railway equipment were also found in Vietnam, Mali and Brazil.

There was a substantial increase in the export of Indian films to Rs 5.36 million in 1977-78 compared to Rs 3.2 million in 1976-77.

The export earnings of packet tea, tea bags and instant tea exceeded Rs 500 million in April-October 1978 compared to Rs 200 million in the corresponding period of 1977.

Among the other notable developments in 1978-79 were the introduction of new products such as window sections and hand tools in Iraq, fishing hooks in Hungary, roofing tiles in Sri Lanka, coin blanks in Nepal, boxing gloves in France, garlic flakes in Japan, sorghum seeds in Vietnam, and cattle feed in Syria.

New markets were also developed in UK for instant coffee, in Saudi Arabia for gramophone records, in Kuwait and Australia for Walnut kernels, in Hong Kong for curry powder and finished leather, in Yemen and Hong Kong for pineapple joice, in Yemen for mango pulp, in Djibouti for mango juice and in Iraq for peanuts [*Foreign Tr. Bull.*, 1979, 10(2), 6].

Licensing for Small Units'

The Union Government has proposed the introduction of a system (as registration certificate) of industrial licensing for protecting small scale industries. Under the proposed system, all small units would have to register themselves with the governments of their States. The registration certificates that would be issued to them would specify the location of units, raw materials to be consumed, and goods to be produced whether they are finished products or intermediates or ancillaries. These apart, the capacity would also be specified. No unit would produce excess of the capacity specified, the defaulter would be proceeded against, and on conviction would be imprisoned for six months or fined Rs 10,000.

The proposal also includes a provision relating to payments by large sector towards supplies made by small industries. While it concedes the right of small industries to expect payment within 60 days after effecting supplies, it actually debars a small industry from initiating legal proceedings against defaulter (E.T., 19.10.79).

Questionnaire on Exports in 1980s

The Committee on Export Strategy [*Industr. News Digest*, 1979, 2(9), 6] for 1980s set up by Commerce Ministry under the Chairmanship of Mr Prakash Tandon, Director General, National Council of Applied Economic Research (NCAER), has issued a comprehensive questionnaire. The questionnaire has been addressed to the economists, trade organizations, banks, large exporters, Export Promotion Councils and others concerned with specific product groups and Federation of Associations of Small Industries.

Among others, the questionnaire has sought their views on the principal factors affecting the rate of growth of world trade and, particularly, the trade among the developing countries, and identification of priority markets, core export sector, effects of canalization policy in regard to export items and export assistance systems, and exchange rate.

The questionnaire also seeks the views of agencies engaged in export business on international marketing and promotional system and joint ventures abroad [*Econ. commerc. News*, 1979, 9(45), 4].

Changes in Import Policy

The banned list, with this change, will now also include acrylic plastic sheets/off cuts, other than acrylic plastic sheets of 0.85-1.2 mm thickness, conveyor beltings up to 1,500 mm width, centrifugally cast furnace rollers, radiant tubes and burner tubes. However, the ban on imports of ceramic discs for capacitors, pig iron excluding charcoal pig iron, low phosphorous grade and low sulphur grade has been removed.

The import items now allowed under OGL are caustic soda (whether as raw material or as consumable); calcined petroleum coke (whether as raw material or as consumable); aluminium foil (plain) for use as raw material or packing

material; pavulon (pancuronium bromide); and food processing machinery including (a) fruit and vegetable cutting, coring, cubing, slicing, seeding, clearing removing, and stem-removing machines; (b) meat processing machinery, such as for mincing and deboning; (c) portable package leak tester; (d) fill height detector; and (e) automatic bottle labelling machine, particularly for specially shaped bottles.

The import items put on the restricted list are conveyor beltings other than those up to 1,500 mm width; acrylic plastic sheets of 0.85 mm to 1.2 mm thickness; paraquat dichloride (import of paraquat dimethyl sulphate is already on the restricted list); all synthetic fibre tips and filters for sketch pens. However, import of cold rolled steel sheets/strips/coils of deep drawing and extra deep drawing qualities (hitherto on the restricted list) has been permitted. In the list of restricted items, import of which will not be allowed to export houses against additional licences, import of polyester films (plain/metallised), except films below 6 micron thickness used in the electronic industry, has been added (F.E., 11.10.79).

Industrial Unrest

According to a Labour Bureau study an unprecedented industrial unrest during the first 6 months (Jan.-June) of 1979 has resulted in the loss of 226.3 lakh mandays against 149.2 lakh mandays for the corresponding period in 1978.

In the first quarter (Jan.-Mar.) West Bengal accounted for the highest time loss due to labour unrest followed by Kerala, Maharashtra, Tamil Nadu and Bihar. In the second quarter (April-June) Tamil Nadu took the top-spot followed by West Bengal, Maharashtra, Uttar Pradesh and Bihar (F.E., 28.11.79).

ENGINEERING INDUSTRY

Engineering Exports—EEPC Strategy

According to the Engineering Export Promotion Council (EEPC), the future of India's export of engineering goods would be influenced by the emergence of China on the export scene, protectionist trends in the developed countries, introduction of multilateral trade negotiations, and possible erosion of GSP benefits and political changes in some of the west Asian and African countries. Besides these external factors domestic ones like availability of steel, power, communication services and port facilities are also to be reckoned with.

EEPC has observed that about 200 top manufacturers account for about 66% of the total export of engineering goods. They should be encouraged to draw corporate programmes for the next 10 years and assess the inputs needed. In order to encourage other manufacturers, particularly in the small scale sector, whose contribution has not been significant so far, the council suggested that they should be provided with necessary market intelligence. They should also be encouraged to participate in delegations, study teams, sales teams and trade fairs and exhibitions.

The Council has pointed out that capital goods and turnkey projects are going to play a significant role in engineering exports during the next decade. In fact, about 50% of the total value of exports would have to be of the above kind if the country is to achieve an export target of engineering goods of the order of Rs 2,400 crores by 1990-91. It is suggested that a high powered project committee in the Ministry of Commerce should ensure that all the inputs needed for timely execution of large value contracts is regularly monitored by the committee.

According to EEPC, there is an urgent need for coordination of export effort. All export promotion agencies should be assigned duties and responsibilities. Participation in trade fairs and exhibitions should be on a planned basis and after making thorough study of the prospects of identified items. Financing by the government should be on a uniform basis to all the agencies involved in the effort [*Econ. commerc. News*, 1979, 9(40), 3].

Leather Splitting Machine

The Small Industries Service Institute, Madras, has developed an indigenous design of a leather splitting machine. The machine costs about Rs 1 lakh compared to Rs 5 lakhs of the imported one (B.S., 24.9.79).

X-ray Image Intensifier

The Central Scientific Instruments Organization, Chandigarh, has designed an X-ray image intensifier closed circuit television system which is very useful in continuous viewing of the X-ray images. It intensifies the image by about 6,000 times.

This system is of immense diagnostic value in visualization of bone fractures, observation of joint movements, visual control of catheter insertions, rapid examination of emergency room patients, localization of foreign bodies, etc.

Filament Winder

The National Aeronautical Laboratory, Bangalore, has developed know-how for the manufacture of a filament winding machine. This machine is used for making fibreglass reinforced plastics which are widely used for making components in the field of aeronautics, space, electrical, chemical and allied industries.

The main components needed for manufacturing the winding machine are: reduction gear box, electric motor, gear lathe, contactors, push button switches and other hardware items.

The main equipment required for the manufacture of these machines are gear head lathe, drilling machine, cutting machine, grinding machine, welding set, etc. All are available indigenously.

Tablet Counting Machine

The Electronics Corporation of India has designed a hygienic, non-contact electronic tablet counting machine which can be used for sorting out the tablets

into different batches. The tablet counting machine is a table-top version, incorporating a compact design. It is fast, accurate and a fatigue-free operating machine (B.S., 27.10.79).

Heat Exchanger

The R&D unit of Larsen & Toubro Ltd, India, has designed and fabricated a spiral plate heat exchanger.

The heat exchanger is ideally suited for handling slurries, viscous, fouling fluids and sterilized medium. The high heat transfer coefficient coupled with the wrapping arrangement and the self-cleaning effect obtained in a single passage flow makes the unit efficient and compact. The ease of maintenance makes the unit ideal replacement for a stainless steel tubular heat exchanger.

These heat exchangers can be fabricated in various materials like carbon steel, stainless steel, brass, aluminium, monel and titanium.

For further details write to: Larsen & Toubro Ltd, Chemical Plant Division, L & T House, Bombay 400038 (B.S., 3.10.79).

Distillation Still

The Regional Research Laboratory, Jorhat, has developed an improved distillation still which is superior to conventional ones in terms of lesser energy consumption and higher oil recovery. The still is steam-jacketed to effect better distillation of steam through the plant materials. A condenser is also fitted on the lid to ease the operation. It yields about 90% of the total oil and cuts down the distillation time by 30%.

Ink Drawing Pen

Indira Drawing Instruments of Bangalore has developed complete Indian ink technical drawing pens. The pen draws in accordance with DIN Standard 15 series 2, and is available in 8 different line thicknesses; 0.2 mm, 0.3 mm, 0.4 mm, 0.5 mm, 0.6 mm, 0.8 mm, 1.0 mm and 1.2 mm. An airtight seal, like the German Rotring, is included for instant writing.

For further detail contact: Indian Engineering Industries, 237 Govindappa Naick Street, Madras 600001 [Industr. Prod. Finder, 1979, 7(12) 13].

Wire & Tube Drawing Lubricants

Sure-Draw series of solid, granular drawing compounds have been developed for drawing mild steel, high carbon steel, alloy steels, and stainless steel wires up to 22 gauge. Fluid-Draw series of pastes and liquids are formulated to facilitate wire drawing and tube drawing of copper, brass and aluminium. They are also used for wet drawing mild steel, high carbon steel, stainless steel and galvanized wires above 22 gauge. Economical, trouble-free operation, minimising effluent problems, is the special feature.

For further information write to: Taskar Chemicals Pvt. Ltd, D/94, 15th Road, Chembur, Bombay 400071 [Industr. Prod. Finder, 1979, 7(12), 61].

CHEMICAL INDUSTRY

Industrial Alcohol—National Policy Needed

The All-India Alcohol-based Industries Development Association has urged for a long-term national policy on industrial alcohol and immediate ban on exports of crude rum.

The plea has come in the wake of an acute alcohol shortage accentuated by unrestricted exports of crude rum (diluted alcohol) and the unpredictability of State excise policies, which have dealt a crucial blow to the alcohol-based industries in the country.

The estimated production of alcohol from the available 18 lakh tonnes of molasses in 1979-80 will be around 390 million litres only against the requirement of 450 million litres. To worsen the situation further, 25 million litres of crude rum is understood to have been already exported and permits for export of another 25 million litres are likely to be issued soon (F.E., 26.11.79).

Zinc Phosphate

The Central Electrochemical Research Institute, Karaikudi, has worked out a know-how for making pigment grade zinc phosphate.

Zinc phosphate is used as an anticorrosive pigment in primers. It also promotes excellent intercoat adhesion, particularly under conditions of high humidity.

The estimated demand at present is of the order of 3,000 tonnes/yr. It is partly met by indigenous production.

Capital investment for a plant of capacity 1 tonne/day is estimated around Rs 19 lakhs and the cost of production works out to Rs 18.6/kg. The return on investment is expected to be 55%.

Synthetic Green Pigment

The Regional Research Laboratory, Bhubaneswar, has developed a process for synthetic inorganic green pigment which is used as an ingredient in paints for exterior and interior decoration. It can be used in belt polishes.

Synthetic inorganic green pigment is a new product based on iron oxide and is expected to have the same consumption pattern as that of chrome green with the additional advantage of being less expensive and non-toxic.

Coal Gas Plant

As described in *Indust. News Digest*, 1979, 2(10), 2, a lot of work has already been done in India in the field of gasification of coal. A further development in this field is given below:

Otto India Ltd has developed a new double-stage coal gasification plant, borrowing the technology from its collaborator and overseas shareholder, Dr C. Otto and Company GMBH, West Germany. In the process, coal is first distilled into semi-coke and thereafter the semi-coke is completely gasified.

Currently, the company is erecting the double-stage gasification plant for Kumardhubi Fireclay and Silica Works. The gas will replace fuel oil, partially or fully, by 1980.

The advantage of the double-stage process is that the gas produced is uniform in composition. The tar produced is carried along by the hot gas and does not block the pipelines. The costs of operations are also lower. It has been found that many Indian coals are suitable for gasification and coal gas can go a long way in meeting fuel needs (F.E., 24.10.79).

Furfural Project

An ambitious import substitution project of Southern Agrifurane Industries Ltd in South Arcot district of Tamil Nadu for the manufacture of furfural is expected to go on stream by the middle of 1980.

Furfural is a vital organic chemical used in refineries and chemical industries. There is no indigenous production of the chemical at present and the country imports about 1,600 tonnes of furfural annually.

The project costing Rs 7.5 crores has a licensed capacity of 6,000 tonnes and will have an installed capacity of 3,000 tonnes. It is expected that against a landed import cost of about Rs 1,900/tonne of furfural, the price of the South Arcot product will be around Rs 1,700/tonnes.

A significant feature of the project is that it is based on sugarcane bagasse. Lime, sodium carbonate and superphosphate are the other raw materials.

Besides meeting the indigenous demand, the company can also export its product which holds a good demand abroad. Also, there is a bright possibility of establishing several downstream units using furfural as a raw material such as furfural alcohol, furnace resins and tetrahydrofuran (F.E., 24.10.79).

Enamel

The Central Glass & Ceramic Research Institute, Calcutta, has developed lead-free white and transparent base enamel compositions suitable for application on aluminium metal. The transparent base enamel can be used for all types of coloured coatings.

The enamels mature at comparatively lower temperatures, in the range 540-550°C. Aluminium enamels can be used in the building industry and, owing to their non-toxic nature, they are useful for household utensils. Vitreous enamel coatings on aluminium can be widely used in architectural panels, curtain walls, sun-breakers, internal finishing of boats, ships and aircrafts, etc. with additional advantages of its light weight and higher corrosion resistance characteristics.

The equipments required for the process are oil fired crucible furnace, sieving and mixing accessories, weighing balance, etc. All these items are available indigenously.

For further details contact: The Managing Director, National Research and Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi 110024.

MISCELLANEOUS INDUSTRIES

Silk Exports

The Indian silk goods industry was saved from a virtual collapse in export earnings during the first quarter of 1978-79 due to the steep increase in unit value of exports.

Though the total physical export of silk goods fell from 27.16 lakh sq. metres in April-June 1978 to 25.22 sq. metres in April-June 1979, the value of export was Rs 1,114 lakhs in April-June 1979 as against Rs 861 lakhs in the corresponding period of 1978. The export earnings during the months of July and August 1979 showed a further uptrend and, consequently, the aggregate export realization from sericulture totalled Rs 1,992 lakhs during these two months.

Thus, the silk goods industry brought in an increase of 29.4% in export earnings though physical exports fell by 7%. The fall in physical exports was, however, confined to mulberry silk goods. Tasar silk goods showed an increase both in physical and value terms. In fact, a 13.8% fall in physical exports of mulberry silk goods not only nullified the increase of 16% in the exports of tasar silk goods, but also brought down the overall physical exports by 7%.

TABLE 1—SILK GOODS : EXPORT PERFORMANCE

(Qty in lakh sq. m; Val. in Rs lakh)

	1978 (April-June)		1979 (April-June)	
	Qty	Val.	Qty	Val.
Mulberry silk goods	24.60	770.81	21.22	957.00
Tasar silk goods	2.56	89.75	4.00	156.75
Silk waste	4.14	70.27	1.48	29.03
Total	31.30	930.83	26.70	1142.78

TABLE 2—SILK GOODS : UNIT VALUE REALISATION

(Rs per sq. m)

	1979 (April-June)	1978 (April-June)	Increase (%)
Mulberry silk goods			
(a) Excluding carpets	32.35	26.83	20.6
(b) Including carpets	45.11	31.33	44.0
(c) Carpets only	5432.01	4242.60	28.0
Tasar silk goods	39.19	35.11	11.6

Of the total silk goods export, mulberry silk goods accounted for more than 80% in physical exports and for more than 85% in export values. Export performance of the silk goods and unit value realization are given in Tables 1 and 2 respectively.

Countrywise exports showed that the major importing countries are UK, West Germany, Switzerland, USA and France in that order. Other big foreign markets for silk goods are Italy, Austria, Belgium, Denmark, Hong Kong, Saudi Arabia and Singapore (E.T., 24.10.79).

Plastic Tyre

According to the Office of Technology Assessment (USA), a cast, all-plastic tyre with no cord or bead will be introduced in the next 2-5 years. Advantages of such tyres include cutting production costs by 40% with tyre construction requiring about 33% of the labour and half the capital investment of conventional tyres; reducing weight by 25%, which could cut 30 lbs from the total weight of a typical car; run-flat capability; rolling resistance 10% less than that of conventional radials; longer tyre life; and significant energy savings in production [*Tech. Surv. (Predicasts, USA)*, 1979, 35(13), 7].

Synthetic Diamonds Know-how from NPL

The National Physical Laboratory (NPL) developed synthetic diamonds about 2 years ago. However, the Laboratory was unable to sell the technology because the industry wanted the process to be shown to it at the pilot plant level. Therefore, NPL is planning to start a pilot plant costing about Rs 15 lakhs for the manufacture of synthetic diamonds. The total annual demand of synthetic diamonds in India at present is estimated at 6 lakhs carats valued at Rs 150-200 lakhs. The entire demand is met by imports.

Asafoetida Tablets

The Central Food Technological Research Institute, Mysore, has standardized a technique for the preparation of a good quality compounded asafoetida (hing) in powder and tablet forms.

Such compounded flavours for food preparations are designed to provide retention of flavour characteristics with long shelf-life.

Paper from Tea Leaves

A Japanese firm has produced paper from tea leaves. The new paper contains finely ground tea leaves mixed with 25-30% of pulp by weight and traces of metallic salts to prevent discolouration of the final sheet. The paper, which is said to retain the aroma and colour of tea leaves, can be used as board, fancy wrapping paper, cigarette packets and wallpaper [*Tech. Surv. (Predicasts, USA)*, 1979, 35(24), 2].

TRADE ENQUIRIES

*Fred Law Trading Co., P.O. Box No. 820, Streetsville, Ontario, Canada L5M 2C4. The firm desires to establish mutually profitable working arrangement with a reputable firm in India.

*Joseph Haimowiz, 10-Petah-Tikva Road, 2nd Floor, P.O. Box No. 450, Tel-Aviv, Israel. The firm desires to import rubber goods, auto accessories and spare parts and wishes to have agency for hose clamps (rubber hoses), worm-drive type in stainless steel.

*Cashleen Enterprises (S.L.) Ltd, 12-Leah Street, Freetown, Rep. of Sierra Leone, West Africa. The firm desires to import readymade garments such as wearing apparel, ladies dresses, skirts, blouses, T-shirts, trousers, slacks, men's shirts, trousers, ties, jacket suits for gents and ladies, underwear-brassiers, briefs, slips, casual wear, men's briefs, children dresses, socks, handkerchiefs, scarves, dress materials, lace and silk materials, threads, etc.

*Rio De Ore Continental Agency, P.O. Box No. 1918, Surulere, L/S, Nigeria. The firm desires to import handtools, hardwares, building materials, foodstuffs, milk powder, cutlerys, table-wares, mirrors, caps, hats, machinerys, stationary engines, hardboards, formica, plywoods, glasswares, baby requisites, electric/electronic goods, gents' belts, bicycles and spare parts/accessories, butt hinges, tower bolts, locks, sewing machines, clocks, kerosene cooking stoves, domestic aerosol insecticides, ice block vending machines, ice cream vending machines, canned shrimps, vegetable cooking oil.

*Alozie Trading Stores, 89-Azikiwe Road, P.O. Box No. 399, Aba E.C.S., Nigeria. The firm desires to import textiles, cement, rice, building materials.

*Sephocles Eliades, 77D-77F Aeschylus Street, P.O. Box No. 1088, Nicosia, Cyprus. The firm desires to import EPNS ware of all kinds including liquor cups.

*Ciben Company Ltd, 32, rue du Cheminde-Fer, P.O. Box No. 1121, Lome, Togo. The firm desires to import flatware, table cutlery, table and household glassware, vacuum flasks and also children's underwear, ladies and gents underwear, fancy and textiles materials, sundry goods.

*Mitala, Tamale & Co., Ambassador House, P.O. Box No. 16324, Kampala, Uganda. The firm desires to import stationery materials, paper and paper products, packaging materials, agricultural machinery and implements, domestic and instutional appliances and parts thereof, sewing machines, iron cutlery and hardware articles, machinery for cooking oil mill, etc.

*Salama Service Station, P.O. Box No. 85527, Mombasa, Kenya. The firm desires to import motor car spares and accessories, household goods and kitchen-ware etc.

*Hunein Khalil Hajjar, P.O. Box No. 2800, Damascus, Syria. The firm desires to import rubber transmission belts.

*Al-Ruwaite Trading & Contracting, P.O. Box No. 1461, Mutawa Bldg, Dhabab Street, Ryadh, Saudi Arabia. The firm has established a supermarket and desires to have regular supplies of full and varied range of foodstuffs, fresh and

frozen products and produce incorporating a selected range of non-food merchandise comprising of household and hardware items, watches, cameras, cassette players, calculators, lighters, small range electrical goods, ladies, gents and children clothing-shirts, underwear, jeans, etc.

*Tehamah Trading Co., P.O. Box No. 7230, Abu Dhabi, United Arab Emirates. The firm desires to import textiles, cosmetics, gifts, toys, readymade garments, military and police supplies, electronics, building materials, electrical general items, general maintenance and heavy duty equipment, spare parts, sanitary materials, chemicals and also wishes to have representation of manufacturers and exporters.

*Saud Al-Jaber Gen. Trading & Cont. Co., Majed Al-Salem Building, Salem Al-Mubarak Street, Salmiyah, P.O. Box No. 33298, Al-Rawdah, Kuwait, Arabian Gulf. The firm desires to contact manufacturers and exporters intending to establish business relation in Kuwait.

*Touranto Co. Ltd, Saadi Avenue, Kashef Street No. 24, Tehran, Iran. The firm desires to import glass bottles for foodstuff and medicines.

*Sibag Co. Ltd, Ekbatan, Avenue 100, Tehran-11, Iran. The firm desires to import accessories and spare parts for automobile, farm and agricultural machineries.

*A.M.M. Zaneek & Co., 22-1/4, Quarry Road, P.O. Box No. 174, Colombo-12, Sri Lanka. The firm desires to have representations of leading and reputed manufacturers of various kinds of fasteners, hardware, machine tools, etc.

*Easy Wear Textiles, 110-Lalbagh Road, Dacca-11, Bangladesh. The firm desires to import hand driven socks manufacturing machine.

*National Metals Limited, 34-Lower Jessore Road, Khulna, Bangladesh. The firm desires to import machinery for manufacturing all sizes of nuts and bolts.

*Vacu-Lug Phillippines, Inc., Commercial Centre, P.O. Box No. 896, Makati, Rizal-3117, Philippines. The firm desires to contact companies engaged in the sales of agriculture machineries and supplies to rice paddy processors for the supplies of Morice rice huller rubber rolls, rice polishing blocks or rubber brakes, planshifter's rubber balls.

*Stanley Dental Trading Co., 10-23, Uegahara 8-Bancho, Nishinomiya-shi, Hyogo 662, Japan. The firm desires to import dental units and chairs.

*United Trading & Industries Corp., 2-32-2, Chuochi, Meguro-Ku Tokyo, 152, Japan. The firm desires to appoint distributors for thermal expansion Cylinder—energy saving and as an applied equipment, self powered, fully automatic greenhouse window opener (ventilator).

*Nihon Service Co., Ltd, Rm. 401, Matsubara Building, 8-15-3 Nishishinjuku, Shinjuku-ku, Tokyo 160, Japan. The firm desires to export electronic calculator built-in ball point pens.

ANNOUNCEMENTS

AWARDS

Certificate of Merit in Printing

Science Ki Duniya, a popular science quarterly in Urdu published by the Publications & Information Directorate, New Delhi, has won a certificate of merit for excellence in printing and designing in the 20th national prize competition organized by the Directorate of Advertising and Visual Publicity, New Delhi. The magazine also won a similar award in 1977.

International Award

The International Society for Development of Organizations (SIDO), Malaysia has awarded a Brass Plaque to Bharat Heavy Electricals Ltd (BHEL) for its case study of the year 1978.

BHEL has been awarded for its experience in improving the "Quality of Working Life" of its employees through the "Job Redesign Project" initiated at one of its Divisions.

ICMA Awards for 1978

The Indian Chemical Manufacturers Association (ICMA) has invited nominations for the following six awards:

1. The Sir P.C. Ray Award.
2. The I.C.M.A. Award for Development of Forward Technology.
3. The I.C.M.A. Award for Export of Chemical Product.
4. The I.C.M.A. Award for Export of Technology.
5. The I.C.M.A. Award for Process Design and Process Engineering of Chemical Plants.
6. The I.C.M.A. Award for Social Progress in the Chemical Industry.

For further details write to: Sr. Assistant Secretary, I.C.M.A., India Exchange, Calcutta 700001 or Deputy Secretary, I.C.M.A., 16 Bombay Samachar Marg, Bombay 400023.

EXHIBITION & FAIR

INDECH '80

The Engineering Export Promotion Council has decided to organize a Wholly Indian Exposition, in Baghdad (INDECH '80) during March, 1980 on a big scale in collaboration with Chemicals & Allied Products Export Promotion Council, and Basic Chemicals, Pharmaceuticals and Cosmetics Export Promotion Council.

The main objective of the Exhibition is to narrow the balance of bids with Iraq. The other objectives are as under:

1. To highlight the level of technical capability of sophistication achieved by

the Indian Engineering Industry in various product sectors of import interest to Iraq;

2. To establish direct contacts with Government buying organizations for promotion of exports of our projects;

3. To project the image of India as source of supplies of diverse engineering products.

For further details write to: The Secretary, Engineering Export Promotion Council, "World Trade Centre", 14/1B, Ezra Street, Calcutta 700001.

Osaka International Trade Fair 80

The Osaka International Trade Fair 80 will be held between 18 and 29 April 1980. Specialized areas to be covered include Electrical Appliances, Bicycles, Housing and Home Comfort.

For further information write to: Osaka International Trade Fair Commission, C/o International Hotel, Osaka, 58 Hashizumecho, Uchihonmachi, Higashi-ku, Osaka, Japan.

INDIA-CHINA CHAMBER OF COMMERCE & INDUSTRY

An India-China Chamber of Commerce and Industry (ICCCI) has been formed to promote trade and industrial collaboration between the two countries.

ICCCI will negotiate and settle supply contracts and industrial collaborations on behalf of its members and the Chinese authorities. It will supply and gather trade information, handle queries, provide members with information about Chinese import requirements, and furnish information about the availability of Indian goods.

SYMPOSIUM & WORKSHOP

Subsurface Space and Underground Construction Symposium

This international symposium will be held at Stockholm, Sweden, during 23-27 June, 1980. It is aimed at apprising national and international organizations of the vast potentials of underground constructions. It will also bring into focus technologies for saving land, protecting environment and providing economical storage.

Workshop

The National Aeronautical Laboratory (NAL), Bangalore, will organize, in collaboration with the Indian Institute of Science, Bangalore, a 3-day workshop on 'Signal processors for engineering applications' from 6 to 8 February 1980.

The primary objective of the workshop is to present the basic and advanced concepts and application areas of analogue/digital signal processing for industrial and research problems in a systematic and comprehensive manner. The workshop will include a detailed presentation on new processing techniques with adequate theory, emphasizing both hardware and software aspects, and application of this information to a range of concrete design examples. Practical demonstration of systems simulating actual application is also included.

Scientists, engineers and manufacturers engaged in the development and utilization of signal processors from all over the country are being invited to participate in the workshop.

For further details write to: Shri C.S. Rangan, Head, Systems Engineering Division, National Aeronautical Laboratory, Post Bag 1779, Bangalore 560017.

PUBLICATIONS

Impact of Economic Development on Industrial Relation by Pramod Verma; Academic Book Centre, Ahmedabad. Price Rs 20.

The above publication is divided into nine chapters. The first chapter begins with an introductory survey.

The issues relating to worker, manager and trade unionism have been raised in chapters two and three. Chapters four to seven have been devoted to wage structure and wage trends problems beginning with an examination of occupational wage issues in chapter four.

An analysis of industrial conflict together with time series and cross section studies has been incorporated in chapter eight. The research findings have been summed up in chapter nine where also some policy conclusions have been drawn. At the end of each chapter there is a list of reference books. The bibliography at the end of the volume will be immensely helpful to students (B.S., 18.11.79).

Managerial Economics for Captains of Industry by Santi L. Mukherji and Sampat Mukhopadhyay; New Book Stall, 5/1 Ramanath Majumder Street, Calcutta 700009. pp. 717. Price Rs 50.

Diverse aspects of location of industry, scale of production, demand, costs, prices, marketing management, inventory, investment, capital budgeting, business forecasting, corporate planning, input-output analysis, inflation, foreign trade, taxation, labour and industrial policies, monopoly, social responsibility of business, etc., have all been ably discussed and guidelines provided for the benefit of managers and captains of industry (F.E., 28.10.79).

Source Book on Selection and Fabrication of Aluminium Alloys compiled by the American Society for Metals, pp. 470. Price Rs 404.80 + forwarding charges Rs 8 (The book is available from: Business Press Pvt. Ltd, Technical Books Division, Surya Mahal, 2nd Floor, 5 Burjorji Bharucha Marg, Fort, Bombay 400023).

This comprehensive collection of outstanding articles is for ready and convenient reference on selection of aluminium alloys and all aspects of their fabrication. The contents of the book have been arranged in thirteen sections. The opening section presents an article containing a brief history of aluminium, the physical properties and characteristics of the unalloyed metal, chemical composition limits, and typical mechanical properties of wrought alloys. Other sections cover Selection, Forming, Cold Extrusion, Forging and Forging Design, Melting and Casting, Machining, Heat Treating, Cleaning and Finishing, Welding, Brazing, Soldering and Mechanical and Adhesive Joining.

INDUSTRIAL NEWS DIGEST

Volume 3 Number 2 February 1980

Editor: S.K. Nag

Asst. Editor: V.K. Sharma

Ed. Asst.: Madhu Bala

Published by the Publications &
Information Directorate, CSIR
Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

CONTENTS

Miscellany	1-2
Industry Profile	
Polyvinyl Chloride Resins	3-5
Industrial News	
Licensing exemption, New Projects for Rajasthan, Industrial production, Eco-development	6-7
Casting pit refractories, Rf furnaces and heaters, Press welder, Steam operated pump, Laminating and printing machine	8-9
Drugs and plastics raw materials export, Corrosion inhibitor, Acrylic resin emulsion, Silicon carbide, Ethanol from new yeast, Primer paint, Textured wall-coating	10-12
Rubber industry, Man-made fibres export, Gasoline from garbage, White and green pepper	12-13
Trade Enquiries	14-15
Announcements	
Awards; Fair & Exhibition; Training; Publications	16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate
(CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

The March of Technology

Alvin Toffler in his famous book *Future Shock*, published in 1970, predicted an exponential growth of technological innovations. He equated technology to a "growing engine of change" and saw no way of stopping its inexorable march. By the end of the seventies, however, technologists were lamenting over the slowdown of innovations. Is technology, which was born free, now in chains?

Of course, technology has been hard hit by slower growing economies, the oil crisis, high interest rates and mounting global inflation. These have surely regulated technology much more in the seventies as compared to the previous decade. But has the pace of innovation really slowed? No, according to a report published in *The Economist*. It stresses the point that "people have been looking for it in the wrong places."

Which then are the right places? According to *The Economist*, the microprocessor (first launched in 1971), the genetic engineering technique (called recombinant DNA) which allows genes from one species to be spliced into the genes of another, a number of innovations in upgrading the old basic chemicals, and the production of thousands of different radio-nuclides, all innovations of the seventies, are among the most significant innovations since the industrial revolution.

The climate and environment of technology has, however, changed radically during the seventies. The impact of society on technology and not vice versa has become significant. The environment of technology has become very much a matter of social choice. One glaring example is that the multi-billion dollar "space adventure" which ultimately saw man's landing on the moon in 1972 "would not have got off the drawing board" in the present political climate. The effort and money would most probably have been expended on developing non-conventional, renewable energy sources or for boosting some so-called appropriate technology.

Another example, nearer home, which should drive the point home is the protests raised against the Silent Valley and Kali river projects.

Conducting Polymers

Polymeric substances are, traditionally, non-conductors of electricity and are widely used as insulators. Therefore, a polymer conducting electricity seems more fictional than real. Of late, however, the myth of nonconducting polymers has been busted.

Poly (*p*-phenylene), a polymer had made a place for itself as a very good insulator in missiles owing to its outstanding thermal stability. It has recently been discovered that, when complexed with either electron donors or acceptors, poly (*p*-phenylene) forms highly conducting polymeric systems. The Allied Chemical's Corporate Research Centre, Morristown, N.J., USA has found that

the polymer can be converted from an insulator to a conductor by doping with an acceptor like arsenic pentafluoride or with a donor like potassium naphthalide solution. As a conductor, poly (*p*-phenylene) has very good potential in areas like Schottky barrier photocell.

Although poly (*p*-phenylene) is the first example of a non-acetylenic hydrocarbon polymer that forms systems with metal-like properties, the phenomenon that doped polyacetylene forms conducting polymers was discovered by University of Pennsylvania scientists in 1977.

Solar Village in Algeria

The United Nations University, Tokyo, in collaboration with Algeria's national organization for scientific research, is planning a village in the M'sila province of Algeria. By the end of 1982 about 1,500 people will inhabit the village which will have new houses built by local masons. Traditional community and household life will continue, albeit with a twist: the new village will derive its energy needs entirely from solar power and other renewable energy sources. The village will be a part of the country's programme of Energy for Rural Community.

Incidentally, this village in Algeria will probably be the second "solar village" in the world. In December 1978, Schuchuli, a small village in Arizona (USA) went solar [see *Industr. News Digest*, 1979, 2(9), 1].

INDUSTRY PROFILE

POLYVINYL CHLORIDE RESINS

Polyvinyl chloride (PVC), one of the most important thermoplastics in the world today, has a wide range of applications. In building construction, it is used in roofings, wall coverings, doors and window frames, etc. In electricals, wires and cables and other electrical accessories and fillings consume a substantial quantity of PVC resins. In the form of sheetings, PVC is used as packaging material. Manufacturers of footwear also consume a substantial quantity of PVC resins. PVC is not only used for making complete footwear but also for making soles or the uppers of leather and other shoes. In many entertainment goods like gramophone records, sports goods, toys, etc., PVC resins are used.

The USA is the largest producer of PVC. The per capita consumption of plastics (PVC and other petroleum based organic chemicals) is very low in India. In 1973 the per capita consumption was 170 kg in North America, 140 kg in Japan and only 0.5 kg in India. Thus, the urban per capita consumption of plastics in India, although higher than the average, is still far lower than those of the developed countries of the world.

The production of PVC in India started in 1961, when Ahmedabad Manufacturing and Calico Printing Co. Ltd (CALICO) went into production with a capacity of about 4,000 tonnes/yr.

Present Status

In 1978 there were 5 units producing PVC resins with a total licensed capacity of 98,400 tonnes/yr and an installed capacity of 91,900 tonnes/yr. A sixth unit, Indian Petrochemicals Corporation Ltd (IPCL), Baroda, has been licensed to set up a 55,000 tonnes/yr plant at Baroda using naphtha/ethylene as feedstock. This plant is expected to commence production in 1982. Besides this, letter of intent has been issued to West Bengal Industrial Development Corporation to set up a PVC plant of capacity 45,000 tonnes/yr in Haldia using naphtha/ethylene as feedstock. This plant is expected to be ready in 1984. Table 1 presents the years for commencement of production, and licensed and installed capacities of all the 5 units.

Production

Production of PVC resins started in India in 1961 by Calico in Bombay with the help of imported know-how. However, production picked up only after 1965. From about 11,000 tonnes in 1966 it increased to about 17,000 tonnes in 1968. The production nearly doubled in 1969 as compared to the previous year. This was mainly due to the starting of two new companies, namely, Chemicals and Plastics and NOCIL around that time. Up to 1973, the production showed an increasing trend and reached a level of 49,000 tonnes. Since then and up to 1976, the production was low and erratic. In 1977, there was a substantial increase in

TABLE 1—UNITWISE PRODUCTION, LICENSED AND INSTALLED CAPACITIES OF PVC RESINS

Name of company	Year of commencement	Production			(In tonnes)	
					Licensed capacity	Installed capacity
		1976	1977	1978*		
Ahmedabad Manufacturing & Calico Printing Co. Ltd, Bombay	1961	5,293	5,678	5,579	20,000	20,000
Shriram Chemical Industries, Kota	1964	14,465	15,800	14,767	26,400	26,400
Chemicals & Plastics India Ltd, Bombay	1967	11,384	11,128	11,601	20,000	13,500
National Organic Chemical Industries Ltd (NOCIL)	1968	13,025	17,389	16,856	20,000	20,000
Plastics Resins and Chemicals Ltd, Tirunelveli	1972	2,571	7,026	717	12,000	12,000
*Jan. to Oct. 1978						

production which reached 57,000 tonnes. However, there was again a fall in the production (estimated at 50,000 tonnes) during 1978.

Consumption and Demand

The consumption figures of PVC resins for the years 1973, 1974, 1975 and 1976 are 50,351; 46,997; 41,841; and 47,293 tonnes respectively.

The demand for PVC resins is a derived demand; the growth of PVC resins depends upon the development of industries using PVC resins as raw material. It is estimated that the actual demand for PVC resins which was in the region of 60,000-65,000 tonnes in 1977 is likely to go up to about 1,05,000 tonnes by 1983. The most important end-user of PVC resins will continue to be the cables industry, consuming a little over 40% of the total PVC resins. With the emphasis on agriculture in general and irrigation in particular, the demand for PVC pipes is also likely to go up. The income generation caused by rural industrialization is also likely to push up the demand for PVC footwear.

Two major categories of the end-use applications of PVC resins are flexibles and rigids. PVC flexibles are used in the manufacture of leather cloth, unsupported films and sheets, cables, footwear, PVC conveyor belting and PVC packaging bags. PVC rigids include items like rigid pipes and fittings and rigid sheets.

Apart from the growth of end-use industries, the future demand for PVC resins also depends upon the policy of the government as regards the levying of excise duty on PVC resins.

TABLE 2—IMPORTS OF PVC RESINS

(Qty in tonnes; val. in Rs lakhs)

	By Emulsion		By Suspension	
	Qty	Val.	Qty	Val.
1974-75	661.5	44.5	45.4	6.5
1975-76	191.7	12.0	213.2	15.0
1976-77	91.8	7.3	217.0	15.8

The price of PVC resins was in the region of Rs 15/kg at the beginning of 1979 and the excise duty was 40% *ad valorem*. Reduction in the excise duty from 56% to 40% in March 1976 had a favourable effect on the sale of PVC resins. Similarly, the rate of excise duty levied on the products using PVC resins will also determine the future demand for them. Another important aspect is the sale promotion policy of the companies manufacturing PVC resins.

Another important factor while estimating the demand for PVC resins is the use of substitutes. For many of the end-uses of PVC resins like packaging, pipes, etc., other petroleum based chemical products like high density polyethylene (HDPE), low density polyethylene (LDPE) and polypropylene can also be used. With the IPCL polypropylene plant going on stream, the availability of this important raw material is likely to increase. This is likely to slow down the use of PVC resins and the increase in their demand may not be as high as it had been in the past.

Demand Supply Gap

The requirement of PVC resins during 1979 was around 80,000 tonnes against an estimated production of 55,000 tonnes leaving a gap of 25,000 tonnes to be met by imports. Many processing units (particularly in the small scale sector) have been subjected to severe hardship on account of acute scarcity of this raw material. The closure of the PVC plant of Plastics Resins and Chemicals in Tamil Nadu for over a year has aggravated the situation. All efforts should be made to restart this plant which has an installed capacity of 12,000 tonnes/yr.

Export and Import

The export of PVC resins is negligible.

PVC resins are imported mainly from Japan, Italy, West Germany, the Netherlands, Romania, UK, Malaysia and Switzerland. Import figures of PVC resins (manufactured by emulsion method and by suspension method) for the period 1974/75 - 1976/77 are given in Table 2. Although figures for the last two years are not available, Table 2 indicates that the trend of imports is downward for PVC resins by emulsion and upward for those by suspension [*Industr. Researcher*, 1978, 5(3), 145; *Chem. Times*, 25.12.78; E.T., 5.2.79; *Commerce*, 7.12.79].

INDUSTRIAL NEWS

GENERAL

Licensing Exemption for Medium Units

The government has relaxed foreign exchange limits to exempt medium units from industrial licensing.

According to the Industry Ministry, raw materials and components, which are on open general licences and which form essential inputs for the manufacture of items by any new industrial undertaking, may not be taken into account for computing the foreign exchange requirement limits to be applied for purposes of industrial licensing.

The government allowed this concession to medium units, which are already enjoying exemption from licensing provisions, in view of the comfortable foreign exchange position prevailing at present.

The release listed 11 items among the raw materials which are not on OGL but are partly available within the country and partly imported, and stated that these would be treated as "wholly imported" for purposes of computing foreign exchange requirements for new industrial undertakings. The items are copper, zinc, lead, nickel, tin, sulphur, DMT, rock phosphate, asbestos fibre, methanol and ethylhexanol (octanol).

One of the criteria for claiming exemption from the licensing provisions of the Industries (Development and Regulation) Act is in regard to the foreign exchange limits for import of raw materials and components.

The existing limits are: (i) the proposed investment does not require foreign exchange in excess of 10% of the ex-factory value of the annual production arising from such investment or Rs 25 lakhs, whichever is less, for the import of raw materials other than steel and aluminium required for such manufacture; and (ii) the proposed investment does not require foreign exchange in excess of 10% of the ex-factory value of the annual production arising from such investment or Rs 15 lakhs, whichever is less, in any year after 3 years of the commencement of production for the import of parts and components for such manufacture (F.E., 29.11.79).

New Projects for Rajasthan

The Rajasthan government has signed agreements for five new joint sector projects to manufacture synthetic yarn, calcium carbide and portland cement. These projects involve investment of Rs 100 crores.

Of these there are three synthetic yarn projects. Two of them will be undertaken in association with entrepreneurs now prominent in the Calcutta tea trade - Mr S.L. Dhanuka of Dhunseri Tea Industries Ltd and Mr N.K. Daga of Derby Tea & Industries Ltd.

The other two projects are a 200-tonnes/day mini-cement unit and a calcium carbide plant. As far as possible the projects will be located in the backward areas of the state (*Capital*, 10.12.79).

Industrial Production

The monthly index of industrial production for June, 1979 stood at 139.7. It was lower than the index for June, 1978 by 1.4%.

The growth rate increase during the first six months of 1979 over the same period of 1978 was 3.1%. The growth rate for the three months of the current financial year 1979-80 over the corresponding period 1978-79 showed a fall of 0.3%.

Compared to the month of May, '79 the decrease next month is mainly due to the decrease in production of textiles, food manufacturing industries, except beverage industries, electricity and transport equipment against increase in production of machinery, apparatus, appliances and supplies, tobacco manufactures and miscellaneous manufacturing industries.

The index number of industrial production for each month from January, 1977 to June, 1979 are as under. All figures are provisional.

Month	1977	1978	1979
January	143.8	149.0	158.6
February	139.6	142.3	152.2
March	152.5	159.3	168.8
April	133.1	143.0	145.9
May	133.8	149.0	146.8
June	135.3	141.7	139.7
July	134.6	146.5	
August	135.3	145.2	
September	134.0	145.7	
October	134.6	142.1	
November	133.2	146.9	
December	150.1	162.3	
Average	138.3	147.8	

[*Econ. Trends*, 1979, 8(22), 20]

An Organization for Eco-development

The widespread opposition to the Silent Valley Project in Kerala and the growing agitation against the building of a hydel project in the Kali Valley in North Kanara are pointers to the fact that the Indians are getting increasingly ecology-conscious. In view of this, it is a welcome move by the Government of India to contemplate the formation of an Eco-development Corporation to stimulate and support community action in soil and water conservation and afforestation (*Hindu*, 3.12.79).

ENGINEERING INDUSTRY

Bloating Type Casting Pit Refractories

The Central Glass and Ceramic Research Institute (CGCRI), Calcutta, has developed a process for manufacturing bloating type casting pit refractories. The casting pit of a steel plant constitutes a significant part where the operational requirement of refractories is one of the highest. The annual demand for such refractories in India with the installed capacity of about 10 million tonnes of steel is as follows: pouring refractories (nozzles, stoppers, etc.), 15,800 tonnes; and ladle bricks, 1,14,000 tonnes (high grog, 33,400 tonnes; low grog, 57,100 tonnes; and plastic process firebricks, 23,500 tonnes). With the envisaged programme of producing about 1.8 million tonnes of steel annually through various mini steel plants, there will be a considerable increase in the requirement of these refractories.

At present, most of the refractories are of non-bloating type and are not very satisfactory. Bloating type refractories are partly imported. Because of the limited availability of bloating type refractories for casting pit anywhere in the world, the products have an export potential also.

According to the Institute, bloating type refractories can be produced by a suitable blending of commonly available indigenous clays and other raw materials through a precise control over process variables, including minor additions of certain compounds.

All the major equipments required for the plant are either indigenously available or can be fabricated in the country.

The total capital outlay for a plant of capacity 20,000 tonnes/yr has been estimated at Rs 84 lakhs.

For further details contact: National Research Development Corporation of India, 61, Ring Road, Lajpat Nagar III, New Delhi 110024.

Radio Frequency Furnaces and Heaters

Central Electronics Engineering Research Institute, Pilani, has developed two types of induction furnaces. The first model provides a maximum of 1.2 kW radiofrequency (rf) power at a frequency of about 13 Mhz. The unit is compact, portable, self contained and reliable. It will be useful in metallurgical laboratories and industries. The performance of the model has been found to be quite satisfactory. The iron drilling samples attain a temperature of 1500°C within the short time of 5 seconds.

The second model is mainly meant for heat treatment applications and can also be used for zone refining, glass to metal sealing, crystal growing, high temperature plasma, etc. It can develop a maximum of 5 kW rf power at a frequency of one Mhz. A prototype has been used for many in-house trials for one year successfully.

The raw materials required for the manufacture of these furnaces are power transmitting tubes, rectifying tubes, 5V transformers, meters, relays, switches,

contactors, circuit breakers, exhaust fans, resistors, capacitors, etc. All the items, except the high voltage capacitors, are indigenously available. The main equipment needed are lathe, drilling machine, shearing machine, grinding machine, fly press, gas welder, hand tools, universal bridge, oscilloscope, rf wattmeter, and multi-meters.

At present the items are being mostly imported, though a few indigenous manufacturers have entered the field. The demand is expected to be considerable, but a proper market survey has not been made so far.

The capital investment needed to manufacture 20 units of the 1.2 kW model and 4 units of the 5 kW model is estimated at Rs 2.25 lakhs (fixed capital, excluding land and building, Rs 1 lakh; working capital, Rs 1.25 lakhs). Depending upon the product mix, the working capital requirement will vary.

Automatic Press Welder

Advani-Oerlikon Ltd, Bombay, has developed an automatic bench type press welder which welds brass tags to copper or brass caps for the manufacture of high rupture capacity fuse caps.

The equipment has a 12-position pneumatically operated indexing table which helps continuous loading, welding and unloading operations.

A unique device, called the airlock diaphragm cylinder, ensures that welding takes place at a reduced pressure which is quickly followed up by increased forging pressure. The fully solid state synchronous control, with thyristor contactors, ensures precise and consistent weld quality.

For further details write to: Advani-Oerlikon Ltd, Post Box No. 1546, Bombay 400023.

Steam-Operated Pump

A steam-operated pump that can be powered by solar energy has been developed by Calmac Manufacturing Co. for Marshall Space Flight Center. The pump operates on a pressurize/condense/refill cycle, with water or water/glycol as the working fluid. A concentrating solar collector is installed along with the pump. Steam forces the liquid down the inner chamber, up the condenser and through the outlet valve. When steam in the vapour tube reaches the trip point, it flows into the condenser, causing a pressure drop that draws in fluid to refill the pump [*Tech. Surv. (Predicasts, USA)*, 1979, 35(46), 7].

Laminating and Printing Machine

Bennett Dean Designs, 23 Water Lane, Wilmslow, Cheshire, England, has designed the first machine in the world that can laminate two papers together, print six colours (one or two of them by gravure and the balance by flexographic printing techniques) and emboss the product.

Furthermore, by laminating a recycled backing paper to the light weight top paper, an extremely cost-effective and heavier quality end-product is achieved [*Econ. Trends*, 1979, 8(22), 46].

CHEMICAL INDUSTRY

Drugs and Plastic Raw Materials Import

The State Chemicals and Pharmaceuticals Corporation (CPC) has launched two schemes for providing imported plastic raw materials and bulk drugs to manufacturers for export production on a duty-free basis.

To begin with, the Corporation will make available plastic raw materials like high density polyethylene PVC, polystyrene, DOP and urea formaldehyde for export production. The CPC will supply PVC and polystyrene from its present stocks. Orders for 200 tonnes of DOP and 120 tonnes of urea formaldehyde have already been placed. Import deals for high density polyethylene are being finalized.

So far as bulk drugs are concerned, it has been decided to make 11 such drugs available for export production for the manufacture of formulations. These drugs are: ampicillin trihydrate, ampicillin sodium, ethambutol, tetracycline hydrochloride, iodine, gentamycin, trimethoprim, sulpha-methoxazole, chloramphenicol powder, palmitate and sodium succinate.

Import deals for most of these drugs are under negotiations. Only in the case of ethambutol and iodine orders have already been placed. About 5,000 kg of iodine and 250 kg of ethambutol are likely to arrive shortly. Tetracycline hydrochloride, however, will be supplied from CPC's stocks.

Imports are mainly being made from West and East European countries, USA and Japan.

Under the two schemes, these materials will be made available off-the-shelf on a duty-free basis against export orders.

The above schemes launched by CPC have been made simple so as to help small manufacturers take full advantage of this facility (E.T., 14.12.79).

Corrosion Inhibitor for Cooling Systems

The Central Electrochemical Research Institute, Karaikudi, has developed a formulation which when added to cooling water can inhibit the corrosion of the cooling system.

The demand for such an inhibitor is presently being met partly by imports and partly by indigenous production based on foreign know-how. The estimated demand for such inhibitors is valued at Rs 10 million.

The capital investment for a plant with a capacity of 30 tonnes/yr is Rs 7 lakhs, the cost of production being Rs 6/kg. The return on investment is expected to be 49%.

Acrylic Resin Emulsion

The Central Leather Research Institute (CLRI), Madras, has developed a process for the preparation of an acrylic resin emulsion, designated as Binder RS. The emulsion is used as a binder in finished leather manufacture. It is an important chemical for leather auxiliary manufacturers. The demand in India for

this binder is estimated to be 400-500 tonnes/yr, half of this demand is being met at present through indigenous production and the rest through imports.

The main raw materials required are: acrylic ester monomers (commercial grade), potassium persulphate (pure grade) and emulsifiers (nonionic and anionic, commercial grade). These are not indigenously available and have to be imported.

The capacity of an economical unit is estimated at 500 kg of the emulsion/day (two shifts). The capital outlay for such a unit is as follows: fixed capital, Rs 1,15,000 (Rs 40,000 for building and Rs 75,000 for plant and machinery); and working capital, Rs 5,00,000. The cost of production is estimated at Rs 15/kg.

The process has a high profitability. No effluent or pollution problem is associated with the process. The plant is not power intensive and can be operated with a few people.

Further particulars regarding the process (NRDC Process No. 819-09-9) can be had from: Managing Director, National Research Development Corporation of India, 61 Ring Road, Lajpat Nagar III, New Delhi 110024.

Silicon Carbide

The Central Glass & Ceramic Research Institute, Calcutta, has developed a nitride-oxynitride bonded silicon carbide.

Silicon carbide refractories are widely used as bricks, tiles, crucibles, kiln furniture, muffles, recuperator tubes, etc. in metallurgical, ceramic and other industries. Such refractories, produced in India, have an alumino-silicate or alkaline earth silicate bond. The high-temperature mechanical properties, thermal shock resistance and corrosion resistance of these refractories depend to a large extent on the nature of the binding material. The nitride-oxynitride bonded silicon carbide now developed are superior to other conventional silicon carbide refractories in many respects.

Better Ethanol Yield from New Yeast

Microbiologists of the Haryana Agricultural University (HAU) have evolved a new strain of yeast which will produce more ethanol from the same quantity of molasses in lesser time and without any additional cost. The existing yeast strains used by the distilleries yield 5-6% of alcohol in 30-36 hrs of continuous processing. The new HAU yeast can raise the ethanol formation to 8% in about 24 hrs of fermentation. The development, when made commercially exploitable, will be a boon to alcohol-based industries in the country (B.S., 5.12.79).

Primer Paint

A highly active rust reversal system embodied in an inexpensive acrylic protective primer paint is claimed to transform rust on iron or steel surfaces into a harmless noncorrosive organic complex. As a result of this transformation further rusting is prevented. Being water-based, the primer is not inflammable and safe to use since it contains no solvent to produce vapour hazards. A further

advantage is that it can be applied directly over existing paint or rust-free metal. The paint, on drying, provides a tough, hard primer film ready for overpainting with any air-drying cellulose, synthetic or oil-based paint. It also offers good adhesion both to the surface to which it is applied and to the paint overcoat. The hard finish is resistant to most chemicals.

For further information write to: R.J. Hamer Ltd, Miles Road, Mitcham, Surrey CR4 3 YB, U.K. [Industr. Prod. Finder, 1979, 7(12), 68].

Textured Coating for Walls

Ramapuram Industrial Estate Nellore District (A.P.) in collaboration with a British firm, Fabia Stone, has taken up a Rs 10-lakh project in the small scale sector to manufacture textured coating to replace conventional paints.

The product is widely used in hot tropical climates and locations near the sea where building maintenance costs are higher and economics can be considerably improved by the use of the coating.

The major producer of this coating in the world is an American firm. The main characteristic of the product is that it eliminates the need for plastering over most brick works since it fills surface cracks and defects. It contains a powerful mould and bacteria resisting agent. Application costs are low and over 280 sq. metres can be sprayed on by just one operator and a helper in a day, using a compressor pump and a spray gun.

The product is composed of alkyd resin, titanium dioxide, white spirit, polybutene, asbestos, zinc oxide, mica and perlite, various fungicides, etc.

All damaged sections including flaking bricks and loosely adhering plaster must be removed and made good and special care must be given to areas where excessive chalking has taken place. Then application over dry surfaces is recommended and a dried film thickness not less than 1/8th of an inch should be applied for best results (Hindu, 7.11.79).

MISCELLANEOUS INDUSTRIES

Rubber Industry

The production of natural rubber fell sharply from 1.52 lakh tonnes in 1977-78 to 1.33 lakh tonnes in 1978-79. As the demand of rubber had gone up to 1.58 lakh tonnes, the gap had to be filled by imports which had the effect of sharply increasing rubber prices. The year 1979-80 is not expected to solve the rubber crisis, as the estimated production during the year is only 1.5 lakh tonnes of natural and 35,000 tonnes of synthetic rubber. With the current year (1979-80) beginning with a stock of 40,000 tonnes, the total availability of both natural and synthetic rubber (including imports of 15,000 tonnes of natural and 10,000 tonnes of synthetic rubber) is expected to be about 2.5 lakh tonnes. The demand, on the other hand, has shot up to 2.8 lakh tonnes, necessitating imports not only to fill the breach, but also to have a holding stock.

Import delays, however, have pushed natural rubber prices from Rs 825 per quintal to well over Rs 1,000 per quintal. Rubber industry is a strategic one with

an annual turnover of Rs 1,100 crores. Besides, it provides employment to about 2 lakh people. Therefore, indigenous rubber production has to be boosted by raising the yield per hectare. This is of particular importance as the area under rubber plantation is shrinking and may continue to do so. In this context, the government's new planting subsidy scheme of Rs 45 crores (to be implemented by the Rubber Board) is timely. It is expected to bring an additional 4,000 hectares under rubber plantation.

Man-made Fibres Exports Up

Export earnings from man-made fibre textiles amounted to Rs 41.80 crores in the last financial year as against Rs 32.32 crores in 1977-78. Exports during the period were Rs 3.28 crores higher than the previous best figures of Rs 38.52 crores in 1976-77.

Item-wise exports in 1978-79 were : Fabrics, Rs 29.99 crores; garments and made-ups, Rs 8.24 crores, recording an increase of 135% over the previous year; hosiery and knitwear, Rs 0.65 crores; and tyre cord and miscellaneous items, Rs 2.92 crores. Country-wise, 20% of the exports were made to the UK (8.71 crores), followed by the USA (Rs 3.60 crores), Saudi Arabia (Rs 3.92 crores) and Dubai (Rs 3.71 crores) [*Econ. Trends*, 1979, 8(22), 22].

Gasoline from Municipal Garbage

If the US begins building conversion pilot plants now, some 45% of US gasoline consumption in 1990 could come from biomass. The technique of creating hydrocarbon fuel from garbage is best suited to small plants aligned with municipal waste disposal programs, which qualify for municipal financing at a lower interest of 8%. Once considered too expensive, the process will become more attractive as fuel prices rise, landfills close and waste disposal costs increase. The Naval Weapons Centre at China Lake, California, developed a conversion process that produces 90 octane unleaded gasoline from garbage, and a plant processing 500 tpd of garbage could produce cost competitive gasoline [*Tech. Surv. (Predicasts, USA)*, 1979, 35(39), 11].

White Pepper & Green Pepper

The Central Food Technological Research Institute, Mysore, has undertaken research to develop methods for producing white pepper starting from mature green pepper, and dehydrated green pepper from immature green pepper. If simple and successful methods could be evolved, which could be adopted by the growers themselves, substantial quantities of the new products could be exported from the country. This would increase export earnings from pepper and also fetch higher returns for the grower.

The buff-coloured white pepper is more economical and can be a good substitute for white pepper, which is already being marketed by far eastern countries. The dehydrated green pepper is a more convenient product than canned pepper and is also cheaper.

TRADE ENQUIRIES

*Materials, Inc. 2068 East 37th Street, Los Angeles, California 90058, U.S.A. The firm desires to contact units in aerospace industry.

*Mo Jaims Altit, Perez Galdos, 4, P.O. Box No. 918, Madrid-4, Spain. The firm desires to import all kinds of handtools such as universal pliers, carpenter's pincers, flat spanners, adjustable wrenches, wire cutting nippers, etc.

*Alkazer Joseph Elazar, S. Rothsehold Blvd., Tel Aviv. Israel. The firm desires to import polyamide nylon 6 or 66 flat yarn semi du 11 (20/7 denier, 30/10 denier, 40/10 or 13 denier), polyester flat yarn 70-100-150 denier (semi dull), polyester P.O.Y. (To get) 70-100-150 denier (semi dull), polyester staple (1.5 denier, 38 mm) on regular monthly deliveries.

*International Stationery Mart, Bazar, P.O. Box No. 513, Crater Grand Shopping Circle, Main 101, Aden, People's Democratic Republic of Yemen. The firm desires to import arts & art-wares, agarbaties, agricultural tools, brushes (all sorts for all purposes), bakery equipment, carbon papers, carnival & cricus materials, calenders, drilling equipment; drawing materials, dresses, engraving materials, erasers, elastic bands, fancy gift items, fisheries equipment, gunny bags, glue & adhesive materials, games, home industrial machines & tools, handicraft items, immitation jewelleryes, inks, invitation cards, jute twines, joke & fun materials, jade items, kitchenware, knitting items, knitting machines, lungies, lead pencils, leads, ladieswears, musical items, magnifying glasses, modelling items, napkins, needles (all purpose), new fashion garments, oil (medicated), oil cloth, oversheds, outdoor games, photos & pictures (filmworld), photo albums, pens, quills, quickshade oil colours and oil paints, rulers, readymade garments, rubber goods & ballons, sun-glasses stationery (general) stamp-pads, textiles tools (all purpose), twines, tents, toys, umbrellas, unbreakable glass materials, utensils, vehicles (spare parts) vermicillis machines, vests, wedding cards, waist belts, woollen clothes, X-mas cards, X-mas & other functional decoration items, youth's fashioning & cosmetics, zoological animals, wild animals and pet animals (plastics).

*The firm of Najib Shaker, P.O. Box No. 4 & 78, Hama, Syria. The firm desires to import bicycles, spares and accessories.

*Moussallam Naimie, P.O. Box No. 4835, Damascus, Syria. The firm desires to import all types of imitation golden and silver jari threads.

*A.A. Joannou, P.O. Box No. 1216 Limassol, Cyprus. The firm desires to import PVC and imitation of leather.

*Artemmis M. Symeomides, No. 18 San Souci Street, Nicosia, 14 Cyprus. The firm desires to import spices and other food, drinking material, domestic appliances for decoration, beauty aids, thread material for knitting, souvenirs, etc.

*Akurawa Estate, Co. Ltd, Charles Place, Colombo-3, Sri Lanka. The firm desires to import smooth flooring materials and wall-coverings such as all kinds of tiles, stones and wall paper.

*A Danish firm, Horsens Honning Depot A/S, DK-8700 Horsens, Denmark, is interested in offering technical know-how and recipes for the production of Nut Paste in India. The interested parties may contact them directly for further details.

*Pars Galex Co. Ltd, No. 1, 1st Floor, Bahar Building, Bahar Ave., Tehran, Iran. The firm desires to import house and kitchenwares teflon, stainless steel, enamelled, kerosene heaters and kerosene cooking stoves, spoons, forks, meat choppers, rice cookers, slow cookers; automobile goods and accessories, electronic components and electronic spare parts; interior decorations of cars, auto spare parts, various batteries; photo and film accessories; various films, cameras and other photo equipment.

*Morteza Abdi, P.O. Box No. 1222, Mashhad, Iran. The firm desires to import leather and other items for their shoe making factory.

*Paghasri Factories, Old Karaj Road, Opposite Teheran Container Terminal, Rad St., Teheran, Iran. The firm desires to import aluminium screens for doors and windows to avoid mosquitoes and insects.

*Anjum Asif & Co., P.O. Box No. 5582, 11 Liaquat Market, M.A. Jinnah Road, Karachi-2, Pakistan. The firm desires to import all sorts of chemicals for rubber, paint, cement, sugar, paper, plastic, pharmaceutical, food, match, tanning, beverage, earthenware, soap, photographic, and textile industries.

*S. Mohammed Sadiq & Sons, P.O. Box No. 6133, Karachi, Pakistan. The firm desires to import all sorts of chemicals for the glass, paint, sugar, rubber, cement paper, plastic-pharmaceuticals, food, match, tanning, beverage ceramic, soap, photographic, explosives, parafin wax and allied industries as also carbon selenium metal, black powder, glass colours, PVC resin and its additives, reclaim rubber, bead wire for cycle tyres, nozzels and valves and their parts for cycle tube, switches, starters, bulbs, chockers and other allied products.

*Sonar Bangla, 27 Avoy Das Lane, Hatkhola, Dacca-3, Bangladesh. The firm desires to export goat hair.

*Saleh Carpet Mills Ltd, Chamber House, Agrabad Commercial Area, Chittagong, Bangladesh. The firm desires to export jute carpets.

*Al-Mughni Traders, 167 Annerkilla, Chittagong, Bangladesh. The firm desires to import medicinal herbs, crude drugs, spices, cycle accessories, sanitary equipment, writing materials, machinery spare parts, tools and articles.

*Excellent International, T.S.T.P.O. Box No. 98263, Kowloom, Hong Kong. The firm desires to import all kinds of industrial chemicals.

*Ai-Li Trading Co. Ltd, 175, Min-Tsu W. Rd. Taipei, Taiwan, Republic of China. The firm desires to export cable drum and jacks stand.

ANNOUNCEMENTS

AWARDS

Bhatnagar Awards

The Council of Scientific and Industrial Research (CSIR) has selected 18 leading scientists and technologists for the Shanti Swarup Bhatnagar Award of Rs 20,000 in each discipline for 1978 and 1979.

Among the scientists bagging the awards for 1978 are: Prof. E.S. Rajagopal, Indian Institute of Sciences, Bangalore, and Prof. J.V. Narlikar, TIFR, Bombay (physical sciences).

The award for chemical sciences has again been shared by Prof. Goverdhan Mehta, School of Chemistry, Hyderabad University, and Prof. Girjesh Govil, TIFR, Bombay. The award for biological research for 1978 has gone to Dr Viswanath Sasisekharan, Professor, Biophysics, Indian Institute of Sciences, Bangalore.

Mr S.N. Seshadri, BARC, and Prof. D.V. Singh, University of Roorkee, have shared the award for 1978 in engineering sciences. For mathematical sciences, the award has gone to Prof. E.V. Krishnamurthy, Indian Institute of Sciences, Bangalore. Mr H.N. Siddiquie of the National Institute of Oceanography, Goa, has bagged the prize for earth sciences along with Dr B.I.K. Somayajulu, Physical Research Laboratory, Ahmedabad.

The awardees for 1979 are: Physical sciences—Prof. S.S. Jha, TIFR, and Prof. A.K. Ghatak, IIT, Delhi; Biological sciences - Dr A.N. Bhaduri, Prof. Biochemistry, Jadavpur University and Dr M.K. Chandrasekharan, Madurai Kamaraj University, Madurai; Engineering sciences - Prof. Rama Rao, Banaras Hindu University; Mathematical sciences - S. Raghavan TIFR, and Prof. S. Ramanan, TIFR; Earth sciences - Prof. V.K. Gaur, University of Roorkee, Roorkee.

No award has been given in chemical sciences for 1979 and medical sciences for 1978 and 1979.

State Export Award

Metro Exporters Pvt. Ltd, India, which is a small scale unit, has set a record by winning the State export award almost every year and the central award from the last 10 years.

FAIR & EXHIBITIONS

Milan International Trade Fair

The Trade Fair Authority of India (TFA) has decided to organize Indian participation in the Milan International Trade Fair going to be held from 14 to 23 April, 1980 in Milan (Italy). This fair is considered to be one of the most important

trade fairs in Europe, as businessmen from neighbouring European and even North African countries visit the fair each year. It will, therefore, provide a good opportunity for displaying Indian goods and for negotiating spot business.

There will also be a retail sale section in the Indian pavilion for handicrafts, jewellery, carpets, leather garments, semi-precious stones, silk ties, etc.

For further details contact : Mr S.L. Khanna, Deputy Director, Trade Fair Authority of India, Pragati Maidan, Lal Bahadur Shastri Marg, New Delhi 110001.

Techni-show '80

The 4-yearly metal working industry exhibition, Techni-show '80, will be held at Utrecht, Netherlands, from 17 to 22 March, 1980.

For further information write to: Royal Netherlands Industries Fair, Koninklijke Nederlandse Jaarbeurs, Jaarbeursplein, Postbus 8500, 3503 RM Utrecht, Netherlands.

International Chemistry Show

The 4th International Chemistry Show will be held in Bucharest - Romania from 7 to 15 May, 1980. The products of display will include:

Machinery and equipment for the chemical, plastics and rubber industry; and licences, patents, know-how and specialist literature.

Measuring, control and supervision machines and apparatus, and laboratory installations and apparatus.

Chemicals, chloro-sodium products, reagents, lacquers and paints, chemical fertilizers, and insecticides, fungicides, etc.

Pharmaceuticals and dental materials.

Raw materials for chemical, petrochemical and pharmaceutical industries.

Plastics articles for industrial use and consumer goods, and rubber articles including tyres.

Cosmetics, perfumery products and soaps.

Lube oils, paraffin and ceresine.

Photographic chemicals.

Packings for chemicals.

For further information contact: The Fair and Exhibition Co., Exhibition Complex, 1, Piata Scintei, Bucharest - Romania. Tel. 183183, Telex: TIB-R 11108, Cable: TIB-R Bucharest.

TRAINING

Management Workshop Series

The Shri Ram Centre for Industrial Relations & Human Resources, 5 Sadhu Vaswani Marg, New Delhi 110005 will arrange the following series of two-day workshops which will focus on skill development of managers using proven principles from behavioural sciences. Fees for participation in 1-3 workshops. Rs

300; in 4-6 workshops, Rs 250; and in more than 6 workshops Rs 200. Further details are available from the Coordinator of Training.

Workshop	Date
Interviewing for Selection and Promotion	February 12-13
Handling Grievances	March 11-12
Operationalising Joint Forums	April 8-9
Negotiating Collective Agreements	July 8-9
Appraising Performance	August 5-6
Conducting the Disciplinary Enquiry	September 9-10
Making Meetings Work	November 11-12
Counselling Employees	December 9-10

PUBLICATIONS

Plastics Chemistry and Technology by Walter E. Driver; Van Nostrand Reinhold Company, USA. pp. 268. Price Rs 161.07 + forwarding charges Rs 7 (The book is available from: Business Press Pvt. Ltd, Technical Books Division, Surya Mahal, 2nd Floor, 5 Burjorji Bharucha Marg, Fort, Bombay 400023).

Here is a full-scale guide to every aspect of plastics from polymer chemistry through the latest techniques of processing, testing and design. Of particular value to engineers who do not have an extensive background in chemistry is the guide's basic easy-to-follow treatment of thermoplastic polymer chemistry, the mechanisms of thermo-setplastics, and the relationship of chemical composition and structure to polymer performance. There is also thorough coverage of epoxy resins, silicones, fillers and reinforcements, and ablative materials and processes including their selection, applications and advantages. The guide describes all major kinds of foam, and provides methods for calculating their thermal conductivity from their constituents. Fast-growing processes such as stretch-blow moulding, polyurethane foaming, and reaction injection moulding are described.

Industrial Chemicals Handbook; Small Business Publications, SBP Bldg, 4/45 Roop Nagar, Delhi 110007. pp. xii + 781. Price Rs 150.

The *Handbook* embodies profiles of some 160 chemicals and allied products. Each product profile covers process flow diagram, reactions involved, raw materials and utility requirements, process of manufacture, properties and uses, market potential, plant economics, equipment and machinery required, and the principal manufacturers of the product.

The appendices provide a Directory of worldwide contractors of chemical plants, international standards, chemical manufacturers and dealers in India, ISI standards for various chemicals, and names of consultants, chemical plant fabricators and suppliers.

The *Handbook* can be a good ready reference for all those concerned with the chemical industry.—V.K. Sharma

We thank you for the interest you showed in the *Industrial News Digest* during 1979. The subscription for 1980 falls due in January 1980. We shall request you to kindly fill up the Order Form given below and return it to us along with your subscription. Please ignore this if you have already paid the annual subscription for the *Digest* for 1980.

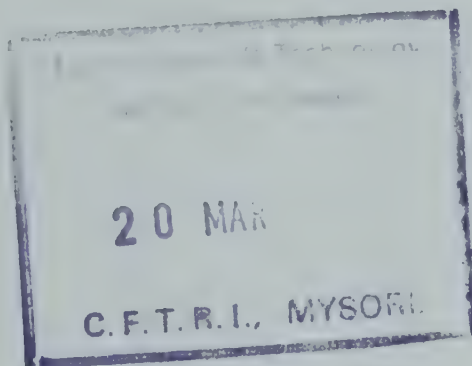
ORDER FORM

I am sending by m.o./cheque/draft Rs 20.00/£ 4.00/\$ 8.00 payable to *Publications & Information Directorate* as annual subscription* for 1980 to the *Industrial News Digest*.

*Organizations requiring invoice may please intimate.

Name:

Address:



Date

Signature

INDUSTRIAL NEWS DIGEST

Volume 3 Number 3 March 1980

Editor: S.K. Nag

Asst. Editor: V.K. Sharma

Ed. Asst.: Madhu Bala

Published by the Publications &
Information Directorate, CSIR
Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

CONTENTS

Miscellany	1-2
Industry Profiles	
Vanaspatti Industry	3-4
Bicycle Industry	4-5
Industrial News	
Exporters spared, Small woollen units, Bangladesh-India tie-ups, Export promotion	6-7
Infrared thermometer, Soil ameliorator, Roll camber grinding machine, Electronic sewing machine, Glass cutting machine, Hydraulic traction machine, Sound level meter	7-9
Graphite contacts, Non-cyanide chemical stripper, Chemical industry in China, Silicon nitride ceramics	10-11
Alcohol from tapioca, Processed food exports, Shellac export, Oxinol	12-13
Trade Enquiries	14-15
Announcements	
Awards; Fairs; Training; Fibre Research Laboratory; Publications	16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate
(CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

Oil Import Bill Staggering

India has almost finalized the imports of its requirements of over 16 million tonnes of petroleum crude and 5 million tonnes of petroleum products. However, with the latest hike in crude prices by the exporting countries including Iraq and Iran, the import bill is estimated at Rs 5,300 crores for 1980-81 compared to Rs 3,800 crores for 1979-80. This huge sum will eat up about 75% of India's expected export earnings during the year. When we consider another important import item, namely, fertilizers, the import bill would take care of the entire export earnings. At present, a gap of 40% between the demand and availability of fertilizers during the year is expected and this would inevitably lead to imports.

Evidently, the latest price hike of petroleum by all OPEC countries has taken the government experts by surprise. In November 1979, an official working group on energy policy had concluded that the crude import bill would equal 75% of the export earnings only by A.D. 2000.

Where Pollution Helps

Air pollution may have at least one hidden benefit. A Tennessee Valley Authority (TVA) soil chemist, J.C. Noggle, has come up with a claim that many crop plants draw much of their daily requirement of sulphur from atmospheric pollutants. Sulphur affects the plants' chlorophyll content and, in turn, their photosynthesis and growth. Noggle has predicted a 10% drop in crop yield for the seven-state TVA area if the atmosphere is purged of sulphur. To offset this loss would cost \$ 6.7 million in fertilizers. Of course, Noggle, is no supporter of atmospheric pollution. He has only shown the need for alternative supply of nutrient sulphur to plants when the air above is made clean.

Coal-oil Mixture

Better coal utilization and oil conservation are the dual objectives behind the development of a coal and oil mixture (COM) by Dengen Kaihatsu (Electric Power Development Corpn) of Japan.

COM is a blend of finely ground coal and fuel oil. It can generate much higher energy than coal alone and has the advantage of being transportable by pipeline. Dengen Kaihatsu has been studying COM since 1976. The real snag was the development of a surface agent which will stop the precipitation of fine coal during blending with heavy oil. A special surface agent which satisfies this requirement has now been developed. Mixing tests with Australian and South African coals and West Asian and Indonesian oils have proved successful. Mixtures of Chinese oil and coal and Alaskan oil and coal have also been studied. Burning tests are being carried out.

COM is expected to play the role of an intermediate energy source in the second half of the eighties. The first COM-burning power plant is expected to go on stream latest by 1985.

Modest Ambition

The ambition of the American city of Modesto (California), as far as finding partial relief from its energy shortage is concerned, is quite modest. The city is not looking beyond its own sewage treatment plant for an alternative to petrol for its vehicles. As a pilot project it is running 5 of its municipal vehicles with sewer gas. When the pilot project is expanded to include an additional 250 vehicles, Modesto will save about \$ 700 a day in fuel costs.

The city's sewage treatment plant produces more than 2 lakh cu. ft of gas daily which contains 70% methane. After the gas is processed to remove carbon dioxide and hydrogen sulphide, it is compressed and put into two pressurized tanks at present. Each of these tanks have a capacity of 325 cu. ft of gas which is the equivalent of about 30 litres of petrol. From these tanks the gas is dispensed into the municipal vehicles.

INDUSTRY PROFILES

VANASPATI INDUSTRY

Vanaspatti is a mixture of vegetable oils which has been refined, hydrogenated, deodorized and vitaminized. It was introduced in India after World War I through imports from Holland. Due to its pleasing appearance and odour, granular texture, tasteless character and low price (compared to *ghee*), it soon caught the fancy of the Indian public and rapidly started replacing *ghee* as a cooking fat.

Capacity

Indigenous manufacture of vanaspatti started in 1930 with the setting up of a unit at Bombay by the Indian Vegetable Products Ltd. Since then the number of vanaspatti manufacturing units has gone up to 84. Initially, the industry was mainly concentrated in the western region of the country. Over the past two decades, however, the northern region has overtaken the western region. These two regions together now account for nearly 80% of the total production of vanaspatti in the country.

The present licensed and installed capacities of the industry are 18 lakh tonnes and 13 lakh tonnes respectively. However, only a small number of the units enjoy economy of scale, most of them being of medium or small size. For example, there are only 4 units which have capacities between 36,000 and 82,000 tonnes and 15 with capacities of 30,000 tonnes. The capacities of the rest are around 10,000 tonnes.

Production

The production of vanaspatti followed a fluctuating pattern in the first half of the seventies. It increased from 521 thousand tonnes in 1970 to 602 thousand tonnes in 1972. After that the production slumped, reaching a low level of only 345 thousand tonnes in 1974 (Table 1). Thereafter, the production picked up and reached a peak of 657 thousand tonnes in 1978. Thus, the monthly average of production in this year was about 55,000 tonnes. In 1979, the monthly average went down during May and June, picked up to 55,600 tonnes in July and again

TABLE 1—PRODUCTION OF VANASPATI

(Qty in thousand tonnes)

1974	345
1975	453
1976	545
1977	579
1978	657
1979	640*

*Estimated

fell below the 1978 average during August, September and October. This fall in production was mainly due to the acute power scarcity in the major vanaspati producing States. However, the production picked up sufficiently during the end of the year to reach the estimated figure of 640 thousand tonnes which is a little less than the peak production of 1978.

Raw Material

A large variety of edible oils extracted from groundnut, cottonseed, soyabean, safflower, mustard, rapeseed, sunflower, soyabean, palm kernel, coconut, nigerseed, etc. form the main raw material for vanaspati. Thus, the production of vanaspati depends to a great extent on the availability of these edible oils, and the structure of the market for edible oils imposes a limit to the growth potential of the vanaspati industry. At present the speedy growth of the industry has been hampered by its heavy reliance on imported edible oil. During the last 3 years about 9-10 lakh tonnes of all types of edible oils have been imported. The foreign exchange spent on these imports rose from Rs 710 crores in 1977-78 to Rs 800 crores in 1978-79. This import expenditure has become necessary on the face of the increasing gap between the domestic output for edible oils and their indigenous demand.

Availability

The per capita availability of vanaspati declined from 900 gm in 1968-69 to 600 gm in 1974-75 and has stagnated at 900 gm for the past 2 years. The per capita availability of vanaspati and edible oils together has improved, as a result of imports, from 3.2 kg in 1955-56 to 4.9 kg in 1978-79. However, even this figure is less than the minimum nutritional level of 6.6 kg.

Research and Development

The problem of increasing the output of edible oils and, consequently, that of vanaspati can be solved only by increasing the R & D effort. At present, about Rs 90 lakhs are being spent annually for R & D work on 9 different oilseeds. Although effective application of all the know-how we have in this field would result in considerable improvement in yield and quality of oilseeds, a breakthrough in R & D could, in the long run, bring about the kind of revolution in production needed to remove the problems troubling both oilseeds availability and growth of vanaspati industry (Suri, E.T., 5.12.79; Information from the Vanaspati Manufacturers' Association of India).

BICYCLE INDUSTRY

Not only is the bicycle the common man's vehicle in India, it is also gaining popularity in industrially advanced countries due to scarcity and high price of oil, pollution and increasing health consciousness. For example, USA has a larger number of bicycles on road than India which is a bigger country than the former.

Although bicycle industry in India made a beginning in 1939, the indigenous production continued to be meagre. This was due to the fact that not only complete bicycles but quite a large number of components were being imported. It is only during the sixties that production of bicycles picked up.

Production

At present India is one of the 6 top producers of bicycles in the world. About 90% of the country's production is concentrated in the north. In 1978-79 India produced about 36 lakhs of bicycles. The production during 1979-80 is estimated to be more than 40 lakhs.

Export

Indian bicycles are being exported to about 40 countries, some important ones among these being West Germany, Hungary, USA, Greece, Turkey, Iran, Iraq, Egypt, Afghanistan, Italy, Bangladesh, Sri Lanka, Thailand and Singapore. It is a remarkable feat to make inroads in the exacting and quality conscious markets like those of USA and West Germany. Exports of bicycles and its parts during 1978-79 were of the order of Rs 26 crores. Exports during 1979-80 are estimated to be of the same order (Hari Chand Goyal, F.E., 8.1.80).

INDUSTRIAL NEWS

GENERAL

Exporters Spared Excise Formalities

According to a notification issued by the Finance Ministry, manufacturers working under customs bond and customs supervision and those who are exporting 100% of their production will be exempted from all Central excise formalities including licensing. The entire production will include any intermediate product, byproduct, and waste arising during the process of manufacture.

If the entire production is cleared for home consumption for any reason, the manufacturer concerned will cease to be entitled to exemption from licensing control. He will be allowed to clear it only after complying with the requisite Central excise formalities. In other words, by exempting the manufacturer from licensing requirements, the governments right to levy and recover excise on the final product (including intermediary products and waste) cleared for home consumption will not be prejudiced.

However, in case a manufacturer wants to destroy the goods (or the intermediary product and waste) on the grounds that they are unfit for human consumption or marketing, he may destroy them under the permission and supervision of the customs officer. This will in no way affect his entitlement to exemption under the notification.

The exemption will not be available to finished goods which attract some excise even on exports. Moreover, no drawback or rebate of excise will be admissible if the manufacturer avails of exemption under the notification (B.S., 17.1.80).

Small Woollen Units Delicensed

The Union Government has decided to delicense woollen spinning units up to a capacity of 1,200 spindles in the public and cooperative sectors covering shoddy, woollen and worsted systems, so that more of cheap woollens and blankets are made available to the weaker sections. This facility of delicensing will be available to the existing units in these two sectors and the new ones proposed to be set up by them.

It has been decided that delicensing facilities should also be extended to private industrial units in the woollen and worsted sectors in undertaking expansion up to 1,200 spindles.

These facilities will not be applicable to MRTP and FERA units and to those units located or proposed to be located within the standard urban area limit (as per census of India, 1971) of a city having a population of more than one million or within the municipal limit of a city with a population of more than 5 lakhs. However, the cases of the existing units in these areas will be considered on merit by the delicensing committee. The rationale behind the delicensing is to make these units economically viable (E.T., 9.11.79; B.S., 9.11.79).

Bangladesh Clears 10 Indian Tie-ups

Bangladesh has sanctioned 10 proposals from Indian private sector industries for setting up joint venture projects there.

The projects, the total value of which will come to over Rs 25 crores, include manufacture of three-wheeler scooters, diesel engines and ready made garments. Industrial houses like Bajaj Auto and the Kirloskar group figure in these joint ventures.

The Bangladesh Deputy Prime Minister, in-charge of Industry Ministry, Mr Jamaluddin Ahmed, who was here in connection with the third general conference of the United Nations Industrial Development Organisation, said that Bangladesh was also waiting for the feasibility reports from a number of Indian companies, which had received 10 proposals for collaboration from Bangladeshi entrepreneurs. A Bangladeshi delegation would visit India soon in this connection, he added.

The joint venture proposals that have been sanctioned involve equity participation by the Indian partners and technical agreements. The Indian partners will be entitled to dividends and provide management as well as know-how to the projects (F.E., 28.1.80).

Export Promotion

Export promotion would be made a national objective in order to increase export earnings and reduce trade deficit, which is of the order of Rs 2,000 crores for 1979-80. The average annual growth rate of exports during 1977-78 and 1978-79 was only 5.5%, against a corresponding figure of 24% for the earlier two years.

The steps to be undertaken by the government to increase exports are: identify and remove various constraints on production, e.g. shortage of power and basic raw materials and under utilization of capacity; lay stress on production of items having export potential; take fuller advantage of managerial talent and advanced technology available in the country; encourage export of value added items; solve problems of shipping and port congestion; and coordinate and strengthen marketing intelligence abroad (E.T., 30.1.80).

ENGINEERING INDUSTRY

Infrared Thermometer

Land Pyrometers Ltd, UK, represented in India by Larsen & Toubro Ltd, has developed a portable infrared thermometer (called cyclops) for accurate non-contact temperature measurement.

Cyclops, general purpose instrument, is designed to make accurate non-contact temperature measurements in situations where permanently installed systems are unnecessary or uneconomic. It can also be used to scan relatively 'hot' or 'cold' spots in many plant and process applications.

For further details contact: Larsen & Toubro Ltd, Instruments Division, P.O. Box 278, Bombay 400 038 (B.S., 3.12.79).

Progressive Soil Ameliorator

A British farmer, John Muirhead, has developed a cultivator designed to obtain higher yields by improving the soil's deep crumb structure, so that more moisture is retained during the growing season. It is particularly suited to dry areas of the world where it is important to conserve moisture.

The device has three sets of tines which can be adjusted to suit local conditions. The action of the leading set permits the retention of the naturally developed tilth and the middle range causes maximum disturbance beneath the top soil to fracture and rearrange the soil particles. The winger subsoiler tines further lift and break up the subsoil without disturbing the nutrient content of the surface. Levelling tines and a crumbler bar can be fitted as optional extras.

The equipment is manufactured in three sizes with working widths of 2,3 and 4 metres, requiring tractors with power capacities ranging from 100 to 200 hp.

For further details write to: Flatford Ltd, High Roans, Sheriff Hutton Road, Strensall, York, England (F.E., 16.12.79).

Roll Camber Grinding Machine

The Grinding Machine Tool Plant, Ajmer, has indigenously designed, developed and manufactured a roll camber grinding machine (Model GRC-55) and handed it to Anil Steel & Industries Ltd, Jaipur. This roll camber grinding machine is the first of its kind to be manufactured indigenously of this size and specifications. The machine will help in a big way to save valuable foreign exchange.

The machine will be useful for steel rolling mills for grinding the vital grinding work-rolls of rolling mills (E.T., 25.12.79).

Electronic Home Sewing Machine

A programmable electronic sewing machine - the first of its kind, which is claimed to radically simplify the concept of home sewing, has been launched in the Swedish market by Husqvarna AB, Swedish manufacturers of household appliances. Featuring 12 utility and 9 decorative stitches, the new product will probably be introduced in the world market in 1980.

Computerized control means fewer moving parts with a resultant reduction in wear and tear. The machine - which bears the trade name Husqvarna 6680 - functions perfectly even after 1,000 hours of hard testing, equivalent to some 30 years of diligent sewing.

Glass Cutting Machine

Macman Engineers (India) has developed a new machine for accurate cutting of flat and other sections of glass refractories, ceramics, grinding/honing media etc., to an accuracy of 1 mm.

It consists of a fixed cutting wheel head and up to 3 hp drive isolated and covered from coolant splash. A special aluminium alloy rollomatic table with 10 frictionless bearings rolls on 'V' guides with effortless ease. A supplementary table on this enables the flat section to cut through over the top section of the diamond

cutting wheel of diameter up to 400 mm. Cooling is provided through an individual motorized recirculating system. Convenient motor and pump controls are provided in the front with appropriate splash guards (E.T., 17.12.79).

Hydraulic Traction Machine

Traction is applied to defective parts of the body in physiotherapy to remove chronic pains. This is force applied in opposite direction to the spinal cord/nerve or neck, legs, hands, etc.

Conventional traction is applied mechanically by means of weights and ropes. This is time consuming, tedious and cumbersome. There are traction beds which incorporate electrical motors. This type of traction gives jerks to the body of patients. The latest method in western countries is to apply traction by Hydraulic Traction Bed. In this method, traction can be varied gradually. The initial traction also can be adjusted as per body resistance. This method gives soothing effect and fast recovery.

Kirloskar Engineering Pvt. Ltd., Pune has successfully developed, for the first time in India, a hydraulic traction bed with able guidance from well known orthopaedic surgeons. The hydraulic traction bed has won for the firm the annual Hari Malini Award in December 1979 from the Maharashtra Chamber of Commerce & Industries.

Sound Level Meter

The Central Electronics Engineering Research Institute (CEERI), Pilani, has developed a digital sound level meter.

A sound level meter performs the function of measuring the pressures created by sound or noise. Actual acoustic pressures are expressed in relation to the threshold as a ratio (in decibels). The sound level meter is used to measure sound/noise levels in auditoria, studios and industries. It is also used for estimating the noise levels of sound systems and in sound field survey.

Bending machine press, drilling machine, hand tools, soldering iron, etc., are needed for mechanical work and assembly. Test equipments required are: AF signal generator, oscilloscope, attenuator power supplies, a.c. millivoltmeter, and pulse generators. All these are available indigenously.

Microphones, resistors (including precision resistors), capacitors, inductors, transformers, diodes, transistors, integrated circuits (IC), light emitting diode (LED) display, printed circuit boards, chassis and hardware materials are needed. All these including the IC and the LED display are available indigenously though the latter is of imported origin.

For the manufacture of 60 pieces of the sound level meter a fixed capital (excluding land and building) of Rs 0.36 lakh and working capital of Rs 0.60 lakh are needed.

Further particulars regarding this design (NRDC Process No. 837-10-9) can be had from the Managing Director, National Research Development Corporation of India, 61 Ring Road, Lajpat Nagar III, New Delhi 110024.

CHEMICAL INDUSTRY

Silver Impregnated Graphite Contacts

The National Physical Laboratory (NPL), New Delhi, has developed silver impregnated graphite contacts using imported graphite. Silver impregnated graphite material possesses the requisite conducting properties of silver and the refractory properties of graphite. Silver cannot be used alone because it may be cold welded with the mating contacts, while graphite alone does not possess the required conductivity for heat dissipation. The impregnation of silver into graphite provides the ideal contacts for relay circuits where regular make and break is needed.

Silver impregnated graphite is used as contact material in signalling and electromagnetic relays and also as a brush material in F.M.P. motors. The contacts, widely used by Indian Railways in signalling, are imported at present.

NPL has developed about 1,000 contacts, which have been tested by the Research Designs and Standards Organization, Lucknow, and Westinghouse Saxby Farmers Ltd, Calcutta, and have been found satisfactory. These contacts conform to IR and BR specifications.

The demand for such contacts is increasing with the introduction of more and more modern signalling techniques. The present import of such relay contacts is worth about Rs 30 lakhs.

The raw materials required are: high purity graphite, impregnable chemicals, and coating/plating material. Except graphite all are available indigenously.

Lathe, milling machine, drying ovens, impregnation unit, furnaces, coating unit, spray units with compressors, generating set balances and soxhlet apparatus are the required equipment. All are available indigenously. The impregnation apparatus can be fabricated in the workshop; its components are available indigenously.

The following test instruments are also required: micrograph, electrical resistivity meter, hardness (VPN) meter, porosity meter, compressive strength meter, chemical analyzers, functional tester, and contact resistance meter. All are available indigenously.

The capacity of an economic unit is 5 lakh pieces/yr. The cost of equipment is estimated at Rs 8 lakhs; working capital, Rs 10 lakhs; and cost of production, Rs 8/piece.

Further particulars regarding this process (NRDC Process No. 804-03-9) can be had from: The Managing Director, National Research Development Corporation of India, 61, Ring Road, New Delhi 110024.

Non-cyanide Chemical Stripper

A certain percentage of plated articles is rejected in electroplating industry because of non-uniform plating. The rejects can be reprocessed by stripping the defective deposits and replating the stripped article under proper conditions. Stripping needs to be done carefully so that substrate is not damaged.

The Central Electrochemical Research Institute (CECRI), Karaikudi, has formulated a non-cyanide stripping additive mixture for removing defective electrodeposits by simple immersion of the rejects in a solution. This solution is suitable for removing nickel and copper electrodeposits on iron/steel.

The substrate obtained by employing the stripper needs no repolishing and can be taken straight through the plating sequence.

Indigenous demand for this product is at present met partly by locally produced material based on foreign know-how and its performance is reported to be not quite satisfactory. The estimated demand for the stripper is expected to be of the order of two lakh litres.

The capital investment for a plant of capacity 75 litres/day (of one shift) is Rs 27,500 and the cost of production works out to Rs 48/litre; the return on investment is expected to be 30%.

Chemical Industry in China

China has bought 150 chemical units worth \$ 4.3 billion from Western Europe, Japan and USA in the last 8 years in a bid to gear up its chemical industry. Currently, China is concentrating on renovation of older factories, developing infrastructure and reorienting management practices instead of massive investments in foreign technology. Even then, according to the National Council for US-China Trade, the country could purchase, during 1979-85, \$ 40 billion worth of processes and equipment. By 1985 USA is expected to export \$ 350 million worth of chemicals to China while importing from it other chemicals of approximately the same value [*Tech. Surv. (Predicasts, USA)*, 1979, 35(48), 3].

Silicon Nitride Ceramics

Silicon nitride ceramics have extended common metal working processes to new limits. Tool inserts made from hot-pressed silicon nitride can machine hard and abrasive metals at higher speeds than conventional sintered ceramic inserts. Cutting tools can be designed with positive-rake geometry. The material's high thermal conductivity removes extreme heat naturally generated by positive rake angles - heat that could destroy both workpiece and tools made from conventional materials. The high thermal-shock resistance of the ceramic allows normal use of coolants during positive-rake machining. Tube-drawing plugs made from silicon nitride allow tubing manufacturers to improve bore finish and reduce friction between plugs and metal. Low friction is especially important when drawing stainless steel and other work-hardening metals. With conventional tungsten-carbide plugs, metal-to-metal contact between tube and plug eventually results in cold welding and galling on the tube surface. Injection-molded reaction-bonded silicon-nitride ceramic parts have been used for tungsten inert-gas welding nozzles, which handle twice the heat flux of equivalent alumina nozzles, enabling welding-torch arc currents to be increased by up to 50%. Silicon nitride offers the added benefit of resistance to build up of spattered material inside the nozzle [*Tech. Surv. (Predicasts, USA)*, 1979, 35(48), 9].

MISCELLANEOUS INDUSTRIES

Power Alcohol from Tapioca

The Central Tuber Crops Research Institute (CTCRI), Trivandrum, has designed a pilot plant for production of power alcohol from tapioca.

The plant, which is in the process of erection, can produce per batch 100 litres of alcohol to be used for experimentation as automobile fuel. According to the Director of the institute, Dr N. Hrishi, tapioca or cassava, along with sugarcane, forms an important biomass for production of alcohol for blending with petrol for running automobiles.

The alcohol-mixed petrol, known in short as "gasohol", has assumed special importance in the context of the present energy crisis in the wake of mounting crude prices.

CTCRI has worked out, the cost of production of power alcohol from cassava on the basis of laboratory data to be about Rs 2.75/litre. The cost break-up is: raw material, Rs 1.66; acids, Rs 0.25; processing, including labour, power and transport, Rs 0.54; and dehydration, Rs 0.30.

On the basis of current demand, Dr Hrishi says, the total requirement of petrol for automobiles and other internal combustion engines in the country is placed at 2,117 million litres. If alcohol could be blended with petrol at 20% level, petrol consumption could be reduced to 1,693.4 million litres. This would mean production of 423.6 million litres of alcohol for blending with petrol.

Emphasising the importance of cassava as an important source of carbohydrate for production of alcohol, Dr Hrishi says, cassava is a crop which shows tolerance to adverse soil and climatic conditions. It does not need the lands required for production of cereal foods.

To meet the additional requirement of 423 million litres of power alcohol, about 2.82 million tonnes of raw cassava is required. This can be achieved from 0.17 million hectares of land, with an average yield of 16.6 tonnes/hectare.

Besides, research work in CTCRI shows that the yield of cassava can be increased to 35 tonnes/hectare by cultivating high-yielding varieties like H-2304, H-1687 and H-165 and by adopting a package of practices recommended by scientists. According to Dr Hrishi, if there is a sustained demand and less problems of marketing, the required quantity of cassava can be made available throughout the year (F.E., 31.12.79).

Processed Food Exports

Export earnings from processed foods have recorded an increase of over 17% in the first seven months (April-October) of the current financial year 1979-80. Judging by this trend, the export target of Rs 139 crores is likely to be achieved.

In the previous financial year, the export target was exceeded - actual earnings being of the order of Rs 109.34 crore against the target of Rs 98 crores.

The performance in the case of walnuts, frozen meat and instant coffee particularly is expected to show a considerable improvement. Export earnings

last year had amounted to Rs 6 crores, Rs 11.4 crores and Rs 3.6 crores respectively for the above items.

In the case of instant tea, export earnings are expected to be maintained at last year's level of Rs 3 crores. Malted milk products, on the other hand, may show only a marginal rise over the previous year's level of Rs 4.2 crores.

So far as exports of biscuits and mango juice are concerned, the performance is likely to be around previous year's levels. Biscuits fetched foreign exchange worth Rs 2.6 crore and mango juice Rs 1.9 crore in the last financial year (E.T., 27.12.79).

Shellac Export Target

Shellac Exports Promotion Council (SEPC) has fixed the shellac export target at 12,000 tonnes valued at Rs 12 crores for the 1980-81 season. This is higher by 1,000 tonnes of the current season's estimated export of 11,000 tonnes worth Rs 10 crores.

Shellac trade circles in Calcutta are optimistic about achieving the targeted exports. They feel that the achievement of this year's target would not pose any difficulty to the Indian shellac exporters who have already booked export orders to the extent of 13,000 tonnes including a backlog of 3,000 tonnes from the previous season. In fact, exports of shellac in recent years have shown an encouraging trend. The figures for previous two years are: 6,345 tonnes valued at Rs 6.34 crores for 1977-78, and 9,264 tonnes worth Rs 8.50 crores for 1978-79.

Apart from increased overseas demand, shellac export trade is now enjoying a price advantage vis-a-vis synthetic substitutes in international markets following repeated hike in petroleum crude prices. On an average, agrobased shellac products are cheaper by 20% than synthetics even at their unit value realization of Rs 10,000 per tonne.

Another encouraging development is the resumption of the American buying of Indian shellac after a long period. USA had been buying shellac from Thailand (B.S., 11.1.80).

Oxinol

Suntech Inc., USA, has developed a new gasoline blending component based on alcohols which offers the potential to increase both the quality and quantity of auto fuels.

The new formulation is a mixture of methyl alcohol and tertiary butyl alcohol and has substantial octane-improving qualities. It eliminates engine-knock, after-run and improves engine performance in many late-model cars that operate on unleaded gasoline. The recommended level of the Suntech product is 3 to 5.5%.

The mixture reduces the octane requirements of many cars and it can partially replace compounds such as toluene and xylene that are currently blended into gasoline.

Oxirane Chemical Co. will produce and market the blending chemical [*Chem. Times*, 1980, 7(1), 4].

TRADE ENQUIRIES

*Takil International Inc., 1141-Broadway, New York, NY-1001 U.S.A. The firm desires to import cotton and silk readymade garments, handicrafts, such as brassware, copperware, etc.

*Maynard Export Co., 7562 East 25 St., Tucson, Arizona 85710, USA. The firm desires to establish mutually profitable arrangements for export and import with a reputed firm in India.

*Commercial Zvelt United, P.O. Box No. 2303, Santo Domingo, Dominican Republic. The firm desires to import sanitaryware, plywood, mill-boards, electric irons, electric bulbs, canner fish, coloured powder for floors, plastic calanders, handkerchiefs, pens, mosquito net, cotton batch towels, rattan cane webbing in rolls, asbestos product for auto-brakes, Kraft paper, white cigarette paper, etc.

*Kismet Jewellery Manufacturing, Rivulet Lane, Grenville. St. Andrew's Grenada W.L. The firm desires to import textile (both synthetic and natural), diet in powdered or tablet form (cure for Diabetes), brassiers, pantees (made from Nylon tricot all shades), sewing machines, sewing threads, bicycles, etc.

*Selton Trading, P.O. Box No. 1119. Rotterdam - 3000 BD Netherlands. The firm desires to import marble goods, brass goods, handicraft goods and readymade garments.

*NAVA. A.S. Bayindir Sokak. No. 36/6, Yenisehir, Ankara, Turkey. The firm desires to import plant and machinery for water treatment.

*Cletus Amadi & Sons International Trading Co. (Nigeria), 5-Edward Street, Abakpa - Nike. P.O. Box No. 1920, Enugu, Nigeria. The firm desires to import motor and motor-cycle spare parts and accessories, office equipments such as perforators, steppers, typewriters, duplicating machines; portable engines electrical parts and accessories such as switches, adapters lamps and lamp-holders, junction boxes; crash helmets; shaving clippers; etc.

*Eas an Y. Ejiwumi & Sons, P.O. Box No. 2462, Lagos, Nigeria. The firm desires to import brassiers, leather straps, padlocks, leather belts, hats and caps for ladies and gents.

*Fikry Technical & Industrial Supplies Co., 64 - Abil Dardaa Street, Alexandria, Egypt. The firm desires to import all kinds of 'V' belts and rubber transmission belts as also the chains.

*G.M.D., Atchia & sons, 35 - MGR-Gonin Street, P.O. Box No. 432, Port Louis, Mauritius. The firm desires to import textiles, galvanized corrugated sheets, plain sheets, food stuff, shoes, steel and iron bars, medical and dental equipments, tools and machineries, sarees, jewellerys, plants, air guns, air revolvers, ice cream machine, cold drink machine, furniture, auto spare parts, etc.

*Gaudson, P.O. Box. No. 327, Port-Louis, Mauritius. The firm desires to import cycle tyres, tubes, spokes, rims and pressure cookers.

*Al-Zamel International Est., P.O. Box No. 16156, Kuwait, Arabian Gulf. The firm desires to import electrical and electronic equipment.

*Alnour Trading & Importing Co. Ltd P.O. Box No. 3049, Jeddah, Saudi Arabia. The firm desires to import lumbercore, plywood, solid timber doors, decore, paper, polyester, aluminium, copper, plastic, adhesive for mica, wood and plastics, formica, sanitary equipments, tiles (mosiaco and ceramics), etc.

*B.A. - Hamman Trading est., Mohanna Building, Al-Khasim Street, (Al Ghorabi), P.O. Box No. 41295, Riyadh, Saudi Arabia. The firm desires to import building materials and equipments, electrical material and equipment, road construction equipment and spare parts, electromedical equipments, hospital appliances and supplies, hospital furniture and instruments, food stuffs, etc.

*Ghobash Overseas Trading Co., P.O. Box No. 162, Dubai, United Arab Emirates. The firm desires to import building materials, construction equipments, electrical (household) appliances, decor items, electronic equipments, etc.

*Braco Manufacturing Co. Ltd , P.O. Box No. 41-15451, Tehran, Iran. The firm desires to import mica sheets, stoves, lanterns and parts, electrical accessories electrical household appliances, cotton textiles, longcloth, etc.

*Mohamed Reza Eftekhari, Avenue Moshtagh, Tehran, Iran. The firm desires to import black pepper, turmeric, bleached ginger, cinnamon, cardamom, preserved ginger, gunny cloth and gunny bags.

*AKR Enterprises, P.O. Box No. 2226, Spencer's Building, 22 - Motijheel Commerical Area, Dacca-2, Bangladesh. The firm desires to import scientific and laboratory instruments.

*Samsons (Homeand Overseas), P.O. Box No. 940, 236. Nawabpur Road, 1st floor, Dacca-1, Bangladesh. The firm desires to import rubber hose pipes, automatic textile mills (for 20 looms), refractories, fire clay, fire bricks, crucibles, morgan, cork sheets, cost wool, grinding wheel/stone, modern rice mills (diesel), diesel engines and M S shaftings.

*Al-Haj Aminuddin Jamader & Sons, 67/6, B.B. Road, Amin Market, Narayanganj, Dacca, Bangladesh. The firm desires to import machinery and equipments such as: batch mixing apparatus, jute-spreader, breaker card, finisher cards, 1st drawing machine, 2nd drawing machine, 3rd drawing machine, spinning frame 41/2 pitch (110/100) roll winding machine, twisting frame precision winders, silver can, bobbins and quality control equipment, HT and LT switch gear and PFI plant, distribution board, etc; for setting up a plant for manufacturing jute yarn and twine.

*Koel International Co. Ltd , Torishima No. 5 Building, 2-15 Sugahara-Cho, Kitaku, Osaka, Japan. The firm desires to offer sea-water distillation unit and water-sterilizer.

ANNOUNCEMENTS

AWARDS

Republic Day Awards

The National Research Development Corporation of India (NRDC) has announced Republic Day Awards worth Rs 27,000 for seven meritorious inventions, besides Rs 15,000 financial assistance for the development of two promising inventions [(i) development of a special machine for twisting tea leaves in one stroke; (ii) development of a new machine for making parabolic reflectors].

The NRDC has also honoured 16 student inventors, who will receive cash prizes totalling Rs 7,700. It has also announced 65 awards totalling Rs 10,200 to students selected at the State level.

ICMR Awards 1979

The Indian Council of Medical Research (ICMR) has given awards to 12 Indian bio-medical scientists for their original and outstanding research contributions in their respective fields.

The Award winners are: Dr G.P. Talwar, Dr A.N. Malviya and Mr N. Kochupillai (New Delhi); Dr M.G. Deo and Dr P.N. Shah (Bombay); Dr J.K. Sarkar and Dr Minati Das (Calcutta); Dr S.S. Kaplay (Hyderabad); Dr R.N. Chakravarti (Chandigarh); Dr H. Srinivasan (Chingleput); Dr Satyawati Chandra (Lucknow); and Dr H.V. Bhatt (Ahmedabad).

Coal Awards

The Steel Ministry has instituted two awards for outstanding contribution to coal science and technology.

A recipient of the senior coal scientist's award will receive Rs 6,000 in cash along with a gold medal. The award for the junior scientist will carry Rs 3,000 in cash and a gold medal.

FAIRS

International Spring Fair

The department of Commerce and Industry, Romania, is organizing an international fair in the South-East of Europe from 7 to 15 May, 1980 on consumer goods production and machines.

For further details write to: Fairs & Exhibition Department of the Chamber of Commerce & Industry, P.O. Box 32-3, 1-Piata Scintei, 71331, Bucharest, Romania.

International Agricultural Fair

The 8th Exhibition on Developing Countries in the Struggle For Food will be held from 9 to 18 May, 1980, in Novi Sad. Exhibitors from over 65 countries will be showing their achievements in the development of agriculture and food

industry. The fair will include most up-to-date equipment for the agricultural production as well as the equipment for processing, packing, transportation and distribution of agricultural products.

For further details, interested parties may contact: *Novosadski Sajam*, 21000 Novi Sad, Hajduk Veljkova 11. Tel: (021) 25-155. Telegram: *SAJAM NOVI SAD*. Telex: 14180 YU SAJAM.

TRAINING

Free training courses to small industries or personnel engaged by them will be conducted in the following trades from March, 1980 at the places noted against them. Only candidates sponsored by small scale industries and District Industries Centres will be given preference for the admission.

Trade	Duration	Place of Training
Machine shop practice	6 months	Small Industries Service Institute, Madras-32
Electroplating and anodising	3 months	
Screen printing	3 months	
Machine shop practice	6 months	Govt. of India Extension Centre, Madurai
Machinist	6 months	
Tool room practice	6 months	
Blacksmithy & forging with heat treatment	6 months	Govt. of India Extension Centre, Pondicherry
Electroplating	3 months	
Machinist	6 months	
Turner	6 months	Leather Finishing Centre, Erode
Fitter	6 months	
Welding	6 months	
Light leather manufacture	6 months	

Applications with complete biodata should be sent to the *Director, Small Industries Service Institute, 65/1 G.S.T. Road, Madras-32/Assistant Director, Govt. of India Extension Centre, Madurai/Thaltanchavadi, Pondicherry/Leather Finishing Centre, B.P. Agraharam.*

Training Institute

Omega Polychem Institute, a division of Omega Consultants (P) Ltd, inaugurated in Bombay on Nov. 24, 1979 will provide training to young persons interested in a career in plastics, rubber, paints and inks industry. Such training programmes would be useful to raw material manufacturers as well as processing industries.

FIBRE RESEARCH LABORATORY

A fibre research laboratory has been set up with assistance from the United Nations Development Programme (UNDP) and the Federal Republic of Germany (FRG) at the Silk and Art Silk Mills's Research Association, Bombay.

The laboratory will help the man-made fibre and textile industry in solving their research and development problems. The first stage of the project has been realized and the implementation of the main project is in progress. The project will be commissioned by June 1980.

PUBLICATIONS

Coloring of Plastics: Theory and Practice by Mukhtar Ahmed; Van Nostrand Reinhold Company of USA. pp. 228. Price Rs 148.75 + forwarding charges Rs 7 (The Book is available from: Business Press Pvt. Ltd, Technical Books Division, Surya Mahal, 2nd Floor, 5 Burjorji Bharucha Marg, Fort, Bombay 400023).

Vital to the strength of plastics industry is its ability to produce a multitude of brilliantly coloured products. This volume provides current information on all aspects of colouring technology. Separate chapters provide detailed coverage of the measurement of colour, the chemistry and physics of colourants and other appearance modifiers, selection of pigments for particular needs and for individual plastics, pigment dispersion, compounding, and colour matching and colour control. Mass colouration of synthetic fibre is described with special reference to polypropylene fibre. Although the book is devoted primarily to mass colouration (pigmentation), various processes and techniques for surface colouration (painting, printing and dyeing) have been included. An entire chapter details regulatory requirements for coloured plastics.

Elastomers: Criteria for Engineering Design edited by C. Hepburn and R.J.W. Reynolds; Applied Science Publishers Ltd, UK. pp. 372. Price Rs 425 + forwarding charges Rs 8 (The book is available from : Business Press pvt. Ltd, Technical Books Division, Surya Mahal, 2nd Floor, 5 Burjorji Bharucha Marg, Fort, Bombay 400023).

This book contains proceedings of a symposium held at Loughborough University of Technology in April 1978, to review developments and present a full picture of current progress in the physics and engineering aspects of elastomers. There are 18 chapters, contributed by eminent authorities in the field, dealing with fundamental aspects of mechanical and fatigue behaviour, effects of fillers, crosslinks, polyurethanes and application of elastomers in transport engineering, building, footwear and adhesives. Contributions from industrial and academic research laboratories in the UK, USA and France and apart from showing progress in research on properties and ultimate behaviour, give specific examples of current testing methods, design procedures and materials optimization concepts.

INDUSTRIAL NEWS DIGEST

Volume 3 Number 4 April 1980

CONTENTS

Editor: S.K. Nag

Asst. Editor: V.K. Sharma

Ed. Asst.: Madhu Bala

Published by the Publications &
Information Directorate, CSIR
Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

Miscellany 1-2

Industry Profile
Tractor Industry 3-5

Industrial News
New industrial policy, Reserved purchases list, Project profiles, Consultancy exports 6-8

New IC, Heat transfer printing machine, Silver recovery machine, Welding machine, Electronic cleaner, Data entry systems, Strip packing machine 8-10

Boric acid plant, Toxiguard, New crude iron processes, Gujarat plant, Glass colours 10-12

Sports goods, Sesame seed dehulling, Sugar from bagasse, Paddy husk combustor, Prefab water treatment plant 12-13

Trade Enquiries 14-15

Announcements
Awards; Fair; Conferences; PHDC guidance window; Institute for rural management; Publications 16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate
(CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

ESCAP Survey Predictions Gloomy

According to a survey conducted by the Economic and Social Commission for Asia and the Pacific (ESCAP), the developed countries are likely to have a zero growth rate in 1980. This in turn will bring about "dire setbacks" in the economies of the developing countries. These setbacks would severely affect the developing countries in their programmes to overcome pressing problems of dwindling energy supplies, lagging food production and growing unemployment. There will be a slowing down of concessional aid and private foreign investment with the consequent dependence of the developing countries on short- and medium-term commercial credit at higher rates.

The main reasons for the economic stress, according to the survey, are the 100% increase in crude prices during 1979, disruption of Iranian crude production and the drought that hit many Asian developing countries last year.

As the imports of oil developing countries are on the rise, the survey has urged "massive transfer of financial resources" to these countries so that external balance for economies urgently trying to develop is ensured. The survey also sees some hope in the Brandt Commission's proposed World Development Fund and the Vienna-based OPEC fund to aid Third world developing nations.

In order that the developing countries of Asia and the Pacific region may achieve a doubling of incomes during the eighties as a minimum desirable goal of their development efforts, ESCAP suggests two essential measures: massive injections of foreign assistance and drastic reforms of the administrative apparatus.

Indian Expertise for Oil Search

Tanzania, Syria, Vietnam, Iran, Algeria and some more countries in the third world are seeking India's assistance in oil exploration after realizing that Indian technology is equally good but much less expensive than US and Western expertise on which they have so far been depending.

The Petroleum Ministry is carefully choosing contracts where returns in terms of share in oil and experiences are rewarding. While it has not as yet decided on participating in exploration in Syria and Vietnam, the Ministry is shortly sending a high-powered team to Tanzania to evaluate the Tanzanian Government offer of a contract to explore 50,000 sq. km of onshore area. In 1978, ONGC successfully drilled two wells in an onshore location off Songo islands in Tanzania.

After Tanzania, India is likely to examine the offer made by Algeria asking ONGC to explore several onshore fields.

Another contract with Iran will give ONGC the largest exploration area after the Rustam field in Iran where, as a subcontractor of an American company, ONGC found oil some years ago.

Protection of Environment

The need for environmental protection and maintenance of ecological balance cannot be over-emphasized. It is, therefore, heartening to learn that Government of India has set up a 10-man *ad hoc* committee to recommend legislative measures and an administrative machinery for ensuring environmental protection. The committee, headed by the Deputy Chairman of the Planning Commission would help in setting up a specialized machinery within the ambit of planned development which will look into various aspects of maintaining ecological balance. The Department of Science and Technology will coordinate the programme and work of the committee.

War on Hunger

In a regional conference of the Food and Agriculture Association held in New Delhi last month, India has suggested a time-bound five point "freedom from hunger" programme. The programme aims at eradicating hunger by 1984.

The Union Agriculture Minister, Rao Birendra Singh, advocated the creation of a special fund from which loans could be given to developing countries for acquisition of foodstocks. The need for building food security systems by every country in the region was also stressed. Emphasis was laid on the transfer of appropriate technology to aid small farmers step up farm yields. It was proposed that a substantial portion of the funds available for development of agriculture should be earmarked for strengthening the basic organizational infrastructure for transfer of technology including extension and applied research.

INDUSTRY PROFILE

TRACTOR INDUSTRY

The Indian tractor industry is of comparatively recent origin. It came on the industrial scene during the Second Five Year Plan which carried great emphasis on the mechanization of agriculture. The first tractor plant in the country was set up by the Eicher Tractors India Ltd at Faridabad in 1961. The agricultural strategy of 1965-67 and the success of the high yielding varieties programme gave added impetus to development of the tractor industry.

In 1968, the government exempted the tractor industry from licensing provisions of the Industries Development and Regulation Act (1951), with a view to giving a fillip to the manufacture of tractors as the installed capacity at that time was inadequate to meet the demand. Furthermore, the industry was included in the list of industries in the core sector. The government also went liberal to allow the industry to import components and raw materials on priority basis and granted additional capital goods import licences. Even though delicensing gave an opportunity for many new entrants into the field and introduced competition within the industry, the growth of the industry continued to be regulated in as much as the government's approval was necessary for any foreign collaboration or for import licences. In 1970, licensing control was imposed on all industries and, thus, the tractor industry once again came under the yoke of licensing.

In 1971, the National Council of Applied Economic Research estimated the demand for tractors at 36,000 in 1973-74 and 79,000 in 1978-79 showing an annual increase of 15%. The Planning Commission accepted these estimates and placed the production target by the end of the Fifth Plan at 80,000 tractors. On the basis of these estimates many additional licences were issued. Thus, in 1979, four firms were granted licences for a total capacity of 32,000 tractors per annum. In addition, seven letters of intent for a total capacity of 39,800 tractors were also issued.

As it turned out, these projections were overestimates and the demand did not materialize to this extent. The Planning Commission looked afresh at the demand and estimated it at about 50,000 tractors by 1978-79. The Directorate General of Technical Development has estimated the annual domestic demand to touch 51,000 tractors by 1983-84. A production target of 45,000 tractors was originally fixed for 1982-83, but this is likely to be revised to 68,000 units in view of the pick-up seen in tractor production. Therefore, the capacity already licensed is now considered to be adequate to meet the demand in coming years. The capacity utilization in the industry has ranged between 45 and 65% during the last 5 years.

Present Position

There are at present 10 units manufacturing tractors in the organized sector with a total licensed capacity of the order of 102,000 tractors. The total installed

capacity, however, is 69,600 tractors and the production was about 55,000 tractors in 1978-79. The production in 1979-80 is estimated at about 65,000. In addition, one unit in the private and another in the public sector have been licensed to manufacture tractors bringing the total installed capacity to 127,000 tractors per year. Total investment in the tractor industry is of the order of Rs 70 crores excluding the large investment in ancillaries. The 10 units presently in operation are: International Tractor Company of India Ltd, Bombay; Escorts Tractors Ltd, Faridabad; Hindustan Tractors Ltd, Baroda; Kirloskar Tractors Ltd, Nasik; Eicher Tractors India Ltd, Faridabad; Tractors & Farm Equipment Ltd, Madras; Hindustan Machine Tools Ltd, Pinjore; Punjab Tractors Ltd, Chandigarh; Harsha Tractors, New Delhi; and Pittie Tractors, Pune.

The industry has maintained a steady upward trend of production ever since its inception (*see* Table 1).

TABLE 1—PRODUCTION OF TRACTORS

	(In Nos.)
1961-62	880
1970-71	19,535
1971-72	16,750
1972-73	20,802
1977-78	41,000
1978-79	54,660
1979-80	65,000*

*Estimated.

Price Control

The government introduced the Tractors Price Control Order in March 1967 in order to make available indigenous tractors at reasonable prices. Selling prices of tractors were revised from time to time on the recommendations of the Bureau of Industrial Costs and Prices. During the period 1972 to 1974 tractor prices had to be revised upwards several times on account of increases in the cost of production. The Tractors Price Control Order was replaced from October 1974 by a system of parametric surveillance. Thus, any price increase made by the manufacturers was subject to a scrutiny of the government. The idea behind this was to ensure a fair return to manufacturers and also maximum utilization of capacity. In 1976, even this indirect price control was lifted, except in the case of 3 preferred models namely, MF 1035 (35 h.p.) and TAFE-504 (50 h.p.) manufactured by Tractors and Farms Equipment Ltd, and Ford-3000 (46 h.p.) manufactured by Escorts Tractors Ltd.

Distribution

The Tractors Distribution and Sale Control Order was introduced in 1971. It prescribed the procedure for registration of orders with dealers. The order forbids any individual from buying more than one tractor during the course of a year and

also bans its subsequent sale within two years except under certain circumstances. Distribution of all types of tractors was covered by this order till 1976. Presently, this order is applicable only to the same 3 models which are under price surveillance.

Import and Export

Import of tractors was permitted liberally up to 1972-73 in order to bridge the gap between domestic production and demand. Tractors were imported from Czechoslovakia, UK, USSR, West Germany, Rumania, Bulgaria and Yugoslavia. The decision to allow large scale import of tractors was influenced by the liberal credit facilities offered by the World Bank and by the indents placed by farmers for imported tractors. The large scale import had a deleterious effect on the growth of the indigenous industry because of the unhealthy competition between the indigenous and imported tractors. The non-availability of service facilities and spare parts of the imported tractors hit the agriculturists hard. Therefore, the government decided in 1973 to ban the imports of tractors altogether excepting those coming under World Bank Assistance Scheme. The indigenous industry is now in a position to meet the present demand and no import of tractors is allowed.

TABLE 2—EXPORTS OF TRACTORS

(Val. in Rs lakh)

1974-75	216.4
1975-76	195.8
1976-77	57.7
1977-78	23.6

The Indian tractor industry entered the export market in 1974-75. The principal buyers are Austria, Indonesia, Japan, Kenya, Muscat, Mauritius, Philippines, Somalia, Sri Lanka, Tanzania, Turkey, Uganda and Zambia. Steps have been initiated by the Indian manufacturers to update the design of engines in order to pep up exports which have been on the decline (Table 2) during the last few years [*Econ. commerc. News*, 1979, 9(43), 11; *Industr. News Digest*, 1979, 2(10), 9].

INDUSTRIAL NEWS

GENERAL

New Industrial Policy

There are indications that the present government is reverting to the industrial policy followed prior to March 1977. The previous government's tilt towards the small scale sector and its restrictive approach to large industries are being given a quiet burial. The policy of reservations for the small scale sector is under review and the list of product areas for such units is likely to be severely pruned soon.

According to the present government, employment generation does not necessarily depend on the creation of so called employment-oriented units. Large and medium scale industries can also create employment opportunities, although their indirect contribution to this is much more than the manpower they directly absorb.

The emphasis is now on the growth of the secondary and tertiary sectors for removing unemployment and poverty. It is presumed that together with the balanced growth of industry progress in these sectors will generate considerable new employment.

The government is also likely to discontinue the policy of promoting rural employment through district industry centres. These centres are said to have served no practical purpose. While entrepreneurs needed inputs and credit, these centres only gave "plenty of advice".

The government is thinking in terms of setting up more industrial estates in the backward areas. Such estates can help in shifting manpower from the farm sector to industry and related sectors of the economy. The government's view is that it is only by transferring a large segment of the rural population from farms to manufacturing industries and tertiary sector, it will be possible in the long run to reduce the level of unemployment and poverty.

The government is keen to ensure full utilization of the existing capacities in various industries. Additional investment is likely to be made only in sectors which are operating at a high level of capacity utilization, as a matter of policy. Care will be taken to restrain creation of additional capacity in industries which have large idle capacity.

Such a formulation will not, however, apply to core sectors like power and coal, where continuity in growth is considered vital for overall economic development (F.E., 23.2.80).

Reserved Purchases List Enhanced

The Union government has added another 16 items to the list of reserved purchases from the small scale sector. With this the total number of items on this list goes up from the existing 241 to 257 for exclusive purchase by the Central government stores purchase agencies from the small scale sector.

The 16 new items generally termed as Group IV items, include diesel engines up to 15 h.p. (slow speed), voltage stabilizers, paper tapes (gummed), clinical thermometers, drawing and mathematical instruments (except drafting machines), aluminium builders and hardware hinges, aluminium drop tower belts, zinc sulphate, nickel sulphate, steel measuring tape, zip fastners (metallic), emergency lamps, electric flash gun, M.S. tie bars, padlocks and railway carriage fans to the extent of 75% requirement only (E.T., 4.3.80).

Industrial Project Profiles

The West Bengal Government has decided to prepare a shelf of project profiles for industrial units to attract new entrepreneurs to select sites in West Bengal for new endeavours.

The proposal is expected to serve as an additional incentive for the industrial development of the State, which is already extending financial and other assistance by way of loans and infrastructural facilities for the purpose.

Allied with this are steps to acquire land for setting up new industrial growth centres and extension of those on which work has already been started. The areas selected are Haldia, Kalyani, Kharagpur and Siliguri.

Among the notable joint sector projects sponsored by the West Bengal Industrial Development Corporation are those for TV sets, scooters, burnt dolomite (Kalyani), watch assembly (Kurseong), maleic anhydride (Kharagpur), tungsten filament (Kalyani), cement grinding (Madhukunda) and slag granulation (Burnpur).

The projects for TV sets and scooters have already been commissioned, while those for burnt dolomite and watches are expected to start production shortly. Construction work on the Kharagpur scheme has begun and that for tungsten filament, cement grinding and slag granulation projects will be taken up during the year 1980-81.

The State Directorate of Mines and Minerals has decided to continue prospecting work in search of mineral deposits in different areas of West Bengal with greater vigour to develop mineral-based industries.

The prospecting programme for next year is for limestone at Ichata, rock phosphate at Parkid, graphite in and around Baranasini in Purulia district and for China clay at Sirahads (Bankura).

A new prospecting unit will be set up at Siliguri to carry out prospecting of known minerals. The West Bengal Mineral Development and Trading Corporation (WBMDTC) which has been continuing the mining operations in Beld (Purulia) has started trial production in the Pachmi Hatgacha stone project in Birbhum.

A new company is being formed in collaboration with the Steel Authority of India on 50:50 basis for commercial operation of the Jayanti dolomite project, the infrastructure of which is now being developed by WBMDTC.

The total investment in the first phase of the project is estimated at Rs 46 lakhs (F.E., 4.3.80).

Consultancy Exports

Industrial consultancy services used to fetch the country an average of Rs 1 crore annually in foreign exchange during the first 5 years of the seventies. In 1975-76 consultancy earnings jumped to Rs 4 crores. Next year (1976-77) the figure increased to Rs 7.5 crores. During 1977-78 and 1978-79 the trend continued and the country earned Rs 9.5 crores and Rs 13.8 crores respectively. Thus, the future of consultancy exports seems bright.

ENGINEERING INDUSTRY

A New IC

The Bharat Electronics Ltd (BEL) has developed and manufactured a new IC called BEL 700 for use in radio receivers.

The IC will particularly help the small scale radio industry in India to come up on the same footing as the industry in other parts of the world. The introduction of BEL 700 will not only simplify the manufacture of radio receivers but would also improve quality of radios.

This new IC replaces 6 discrete transistors and associated passive components. It is an integrated AM/FM radio receiver circuit which provides both amplitude modulated (AM) and frequency modulated (FM) receiver functions on a single chip.

BEL 700 will facilitate production of FM broadcasting sets also. AIR has already introduced FM broadcasting at Madras and has plans to set up FM stations at Bombay, Calcutta and Delhi in the near future [*Econ. commerc. News*, 1979, 9(41), 11].

Heat Transfer Printing Machine

Jam Manufacturing Company, a textile mill of Bombay, has for the first time in the country built a heat transfer printing machine (called calender).

This machine enables transfer of prints from paper to fabrics through a process known as 'sublimation'. This is a pollution free dyeing and printing operation of fabrics for there is no need of water or any chemicals to print the designs. The designs are printed on paper with the help of special ink prepared by mixing disperse dyes with solvents. As opposed to conventional printing, transfer printing needs very little space both for the machinery as well as for inventory.

The capacity of the machine is rated to be 11 m/hr and on a two shift basis it can produce at least 10,000 metres/day (B.S., 22.12.79).

Machine for Recovery of Silver

With the continuing escalation of precious metal prices, the recovery of silver from the fixing baths in photographic laboratories becomes even more attractive.

The machine called El Toro, made by AB Nils Christiansson in Sweden and available in the UK from A. Johnson Co. (London), is an electrolytic unit having rotating anodes. The spent fixing solution from the photoprocessor is kept in

motion by means of a pump. Current through the unit can be adjusted upto 10 amperes. The deposition rate is about 4 g of metallic silver per hour, per ampere.

The cathode upon which the metal collects is a stainless steel cylinder, the anode a carbon rod. The cylinder is easily extracted and the silver scrapped off with a plastic spatula.

The equipment measures 310 × 430 × 520 mm and weighs 13 kg.

For further details write to: Aldwych House, Aldwych, London WC2B 4E1 (01-404 0755) [*Econ. Trends*, 1979, 8(24), 45].

Welding Machine

The Bhabha Atomic Research Centre, Bombay, has designed a portable vacuum electron beam (EB) welding machine for circular welding required in the fabrication of boilers and similar pressure vessels. The electron beam used is a small diameter, high density heat source.

The advantages of EB welding over conventional welding units are: it welds dissimilar metals and those with high melting points. Narrow, deep, penetrating welds (without edge preparation) can be produced in a single pass, and the welds have depth-to-width ratios of 8 to 10 or even higher.

The machine is designed for welding tubes of diameters in range of 110 to 150 mm to tube sheets and nozzles of similar diameters. The machine can be converted with suitable modifications in the mechanical system to a local vacuum machine for carrying out longitudinal welds [*Econ. Trends*, 1979, 8(24), 45].

Electronic Cleaner

Kirloskar Engineering Pvt Ltd, Pune, has developed an electric cleaner which removes extra dust from air by using special type of fibre filters.

These cleaners will be very useful in computer rooms, telephone exchanges and industrial process halls requiring control of abrasive dust, systems for protecting gas compressors, hotels, and cinema halls for protection against cigarette smoke, dust and for preservation of decor.

Data Entry Systems

The Electronics Corporation of India Ltd, has entered the Data Entry Systems' market with a range of versatile systems (including the direct key to floppy system) that meet low, medium and large volume data entry requirements of computer users.

Key to floppy and superior multi-terminal data entry systems (MTDES), with a provision to connect 4 to 32 key stations are designed to replace the fast-fading conventional card based computer systems.

Magnetic tape replaces the card as a medium to give error free data. This cuts the main frame time and, hence, cost in data preparation. What is more, hardware and software with their associate features and options function together to satisfy the most significant requirements of round the clock data preparation. Power fluctuations and failures hardly affect system performance.

Data is fed at the key stations. The fed data can be varified visually on a CRT. The system organizes data in batches. These batches can be transferred to industry standard magnetic tapes at the end of a shift or a batch. (F.E., 18.1.80).

Hand-operated Strip Packing Machine

J.T. Jagtiani has designed a hand-operated strip packing machine suitable for packing supari powder, granules, confectionary, tablets or capsules. It has been specially designed for small scale and cottage industries, laboratories, batch production and pilot plants. The low-cost machine has a capacity of 1,500 tablets/hr or 600 pouches/hr.

For further information write to: J.T. Jagtiani, National House, Tulloch Road, Apollo Bunder, Bombay 400 039 [Industr. Prod. Finder, 1979, 8(3), 41].

CHEMICAL INDUSTRY

Boric Acid Plant

The government has planned to set up a plant to manufacture boric acid (first of its kind in the country) in Kashmir valley. The plant will utilize borax extracted from the hot springs of Pugga valley (only source of borax). A project report for the installation of the plant has been prepared by the Regional Research Laboratory (RRL), Jammu. The plant is likely to be installed in 1980 and will have a daily capacity of one tonne. According to RRL scientists, the plant fabricated for the processing of borax can also be used for the processing of elemental sulphur (*Data India*, Dec. 3-9, 1979).

Toxiguard

Chemocontrols of Bombay has planned to introduce in the country a toxicity monitor manufactured by Eur-Control of Switzerland for industrial effluents. Toxiguard is designed for the supervision of industrial effluents that could be toxic to biological systems.

The measuring principle utilizes a continuous cycle of synthetic sewage, supplemented by industrial effluent, which is aerated and led into a biological filter. After passing through the filter, the dissolved oxygen (DO) content of the sewage is measured with an oxygen probe that provides a continuous output signal. Under normal conditions, the oxygen is consumed by the micro-organisms and the effluents after the filter is almost free of DO. Toxiguard can be connected to an alarm system and thus increase the possibility of avoiding poisoning and disturbing of biological treatment plants.

Already, several state and civic water pollution boards have tested the equipment along with quite a few private sector units and accepted the results (E.T., 17.12.79).

New Crude Iron Processes

Swedish metallurgists have recently developed three new processes for the production of crude iron.

The three processes have different applications. In the two-stage Elred process, developed by ASEA and Stora Kopparberg in cooperation with Lurgi of Germany, coal and concentrates can be used directly, without pretreatment, in sintering and coking plants, the flue gases being utilized for power production in gas and steam turbines. Boliden AB's Inred process is intended for recovering iron from calcined pyrites, a residual product in sulphuric acid manufacture with up to 65% iron content.

The third process has been developed by SKF Steel and combines prereduction in fluid bed with final reduction and melting with the aid of a superhot plasma flame, obtained by blowing a mixture of carbon monoxide and hydrogen through an electric arc. Pre-reduced concentrates and coal powder or oil are fed into the flame, where temperatures of 5,000-7,000°C transform concentrates into molten iron. The residual high-energy gas is used in the prereduction stage (Hindu, 12.12.79).

New Plant in Gujarat

Gujarat Aromatics Ltd (GAL) joined by GIIC and Kasturbhai Lalbhai group in collaboration with Mitsui and Henshu Chemicals of Japan has set up a plant (capacity 5,000 tonnes) manufacturing meta- and para-cresol at Ankleshwar (Gujarat). The plant (costing Rs 12 crores), being the first of its kind in India, will save foreign exchange of Rs 90 lakhs annually on the achievement of full production.

GAL will also offer their byproducts like gypsum, sodium sulphite and soda ash which are used in the cement, fertilizer, plaster of paris, paper, textile bleaching, laundry and soap industries [*Chem. Times*, 1979, 6 (46), 1].

Glass Colours

The Central Glass & Ceramic Research Institute (CGCRI), Calcutta, has developed technology for producing glass colours covering the principal shades at the firing temperatures 480°C and 590°C, and also the white one at 560°C. The technology is economically viable for the small scale sector.

Glass colours are extensively used for obtaining decorative and colour effects on tableware and lighting fixtures, and for permanent marking and labelling on beverage bottles, glass apparatus, etc. The stains (pigments) which impart colour characteristics and are an essential part of glass colours can also find direct use in enamel and pottery industries. Glass colours valued at about Rs 8 lakh are required annually and substantial amounts of these are still being imported.

Calcination furnace, ball mill and sieving accessories are indigenously available. Most of the raw materials are also indigenously available.

The process has been studied on a semi-commercial scale at CGCRI and the laboratory has so far supplied to the industry stains and glass colours worth Rs 2 lakhs.

The suggested capacity of an economically viable unit is 50 kg of glass colours of varying shades per day in one shift. The capital investment on plant and

equipment for such a unit will be Rs 2 lakhs and working capital, Rs 3 lakhs. The average cost of production works out to be Rs 85/kg depending on the colouring shades, giving a profitability of 43% (without considering tax on earnings).

MISCELLANEOUS INDUSTRIES

Sports Goods - Opportunities Abroad

The Indian sports goods industry has done fairly well in exports; the total value of exports increased from Rs 3.6 crores in 1972-73 to Rs 18.1 crores in 1977-78. The export, however, continued to be mainly in traditional items like footballs, cricket balls, tennis, badminton and squash rackets, and hockey sticks and balls. Hardly any diversification has taken place in the product mix for exports. Non-traditional items, e.g. baseball equipment, camping equipment, etc. which are in great demand overseas are not manufactured in India. Moreover, the Indian export items are not considered up to the standard in terms of quality and price. The main reasons for this are already created poor image and no well defined distribution and marketing strategy. If the industry pays attention to the above point, it can surely exploit a large foreign market potential. The Table below describes the potential markets for various sports items.

Items of sports goods	Potential markets
Cricket bats	Australia, UK, New Zealand, Trinidad, Guyana and Sri Lanka.
Hockey sticks	Australia, Malaysia, Singapore, UK, Holland, Kenya, West Germany, Zambia, and Malawi
Footballs	Australia, France, Sweden, Poland, Switzerland, West Germany, USA, Israel and Bangladesh
Badminton, tennis and squash rackets	UK, Australia, Spain, Italy, Canada, Sweden, Holland, Belgium and Bulgaria
EPNS sportsware	Holland, UK, USA, Malaysia, Singapore, Thailand and Kenya

Sources: *Industr. News Digest*, 1979, 2(1), 3; *Industr. Times*, 1979, 21(26), 27.

Dehulling of Sesame Seeds

The Central Food Technological Research Institute (CFTRI), Mysore, has developed a wet dehulling process for easy removal of the husk from sesame seeds, thereby making it possible to obtain from them a good-quality oil and meal.

High-grade sesame oil can be obtained from dehulled seeds. The protein-rich cake flour is useful for enriching various food preparations.

Nearly 77% of an estimated annual production of 4 lakh tonnes of sesame seeds in the country is used for oil extraction and some quantity is used in a variety of sweets, confectionery and bakery products after removal of the fibrous husk. The seeds are required to be dehulled to remove the cuticle, which imparts a dark colour and bitterness to the product. The traditional practice of dehulling the seeds is by soaking the seeds overnight in water, followed by partial drying and rubbing against a rough surface. This is laborious, time-consuming, and is suitable for handling only small quantities.

In the CFTRI process, the seeds are pre-cleaned in a machine and then chemically treated, washed and decuticled. The wet dehulled seeds are dried mechanically.

All the major equipment including units for precleaning, dehulling and destoning, and the drier are indigenously available.

Sugar from Bagasse

Mysore Paper Mills has planned to set up a plant at Bhadravati in Karnataka to manufacture sugar from bagasse. A letter of intent has already been given for the production of 1,250 tonnes of sugar/day. The company is currently pursuing the government for permission to raise the capacity to 2,500 tonnes [*Chem. Times*, 1980, 7(1) 3].

Paddy Husk Combustor

The Central Mechanical Engineering Research Institute (CMERI), Durgapur, in collaboration with the Central Fuel Research Institute (CFRI), Dhanbad, has developed a paddy husk combustor-cum-heat exchanger for drying paddy in rice mills. The plant has a capacity to dry about 1.2 tonnes of parboiled paddy by burning about 100 kg/hr of husk.

The development of the plant, besides bringing waste husk into use and eventually reducing drying cost, will help conserve foreign exchange to a considerable extent.

The technique also completely eliminates the chance of sulphur contamination of rice, which normally occurs with furnace oil fired drying.

Prefab Water Treatment Plant

Voltas Ltd has designed a prefabricated package water treatment plant, the first of its kind in India to remove suspended impurities and bacterial contamination from surface waters. The plant offers a solution to the major drinking water supply problem in rural areas.

The salient features of the plant are portability and cost-effectiveness. It weighs one tonne and can be transported by truck or even bullockcarts and erected at site. It is simple to operate and requires minimal maintenance. It can meet the needs of a village of 2,000 people, where the installation of conventional plants is not an economically viable proposition (*Capital*, 31 Dec. '79).

TRADE ENQUIRIES

*Steve Juette, 950 Washington Avenue, Defiance, Ohio-43512, U.S.A., is interested to import miniature die-cast metal toy cars.

*Exim Trade Company, 9866, 143rd Street North, Seminole, Florida-33542, U.S.A., interested to establish mutually profitable business arrangements with reputed firm in India for export and import business.

*C.P. Zapitis, Zapitis Bldg, 36-Areos Street, P.O. Box No.1479, Nicosia, Cyprus, desires to import brass gift products, ivory gift products, E.P.N.S. table ware, small wooden furniture, etc.

*Ets. Enkay Enterprises P.O. Box No.910 Abidjan, Ivory Coast, West Africa, is interested to import all kinds of hand tools.

*Garison Alade Nigeria Enterprises, P.O. Box No.9776, Lagos, Nigeria, is interested to import sunglass, spectacle frames, hats and caps, ladies brassiers, panties, watch straps, watches, imitation jewellery, hand tools, leather belts, general merchandise.

*S.K. Wole & Sons, P.O. Box No.8902, Lagos, Nigeria, is interested to import medical appliances, equipment such as suction machine, autoclave machine and their spare parts, mercury vapour lamps for operating theatre, mercury pot and chemicals.

*Traboulsi Bros., Riviera Center Bldg, Corniche Mazras, Beirut, Lebanon, is interested to import mechanic files, taps and dies, hack saw blades for hand and machine, chucks for lathe, magnetic chucks, grinding wheels.

*Daily Trading Agency, 8-Bourbon Street Port-Louis, Mauritius, is interested to import clear float glasses and clear laminated safety glasses in different sizes.

*Alrefeed Trading & Contracting Est., P.O. Box No.6473, Jaddah, Saudi Arabia, is interested to import eatables, furniture, footwear, soft drinks, cosmetics, grains, cooking oil, etc.

*Ali Aied Aseeri Est, P.O. Box No.10737, Riyadh, Saudi Arabia, is interested to import textiles - silk, cotton and all kinds of tissues for women, carpets, mallets, (wall-to-wall) wall paper, as well as toys for children and adults.

*Abdullaziz M. Al-Otibi Est, P.O. Box No.6812, Riyadh, Saudi Arabia, is interested to import pharmaceutical products.

*M.N. Babonji Est., P.O. Box No.683, Mecca, Saudi Arabia, is interested to import tinned food, electrical instruments, textiles, readymade garments, shoes, etc.

*Al-Taqi Trading Agencies, P.O. Box No.4063, Hodeidah. Yemen A. Republic, is interested to import talcum powder, hair oil, hair pomade hair combs, agarbati, safety razers, blades, pressure stoves, burners cotton wicks, sanitary wares and fittings, cotton sewing thread, embroidery thread, buttons and sewing articles, artificial jewellery, fluorescent lighting fixtures, electrical bakelite accessories, biscuits, confectionery, pickles, mango juice and pulp, vermicelli and textile.

*Goldstar Enterprise, 69-Khatunganj, P.O. Box No.268 Chittagong, Bangladesh, is interested to import steel scrap for melting-foundry & re-rolling quality, pig iron - foundry & coke variety, semi-finished steel like M S Billets, finished steel like wire rod 5.5 mm, and HRCA sheets and galvanized sheets, tin plates both prime and waste qualities, aluminium ingot as well as aluminium circles, sheets, semi hard and hard, re-rolling mill machinery and equipment, textile machineries and spare parts, jute mill machinery & parts, handloom textile mills' parts & components, textile fabrics mainly 100% cotton - prints only 36" width, dyed plain materials 36" and also 44/45", grey cotton yarns from 10s upward to 80s in hanks, staple fibre and rayon yarns, chemicals and industrial pharmaceutical raw materials, dyestuffs for textiles, railway track materials and equipment including loco-diesel and steam-railway wagons complete, vehicles and equipment for use by municipalities and sewer cleaning equipment and vehicles, coal truck and buses, automobiles, passengers buses, lime stone & dolomite for steel and paper mills, bitumen & asphalt for road, turn-key projects, urea, and TSP fertilizers, handling equipment for ports, ocean going tugs and coaster vessels & marine equipment including marine diesel engines, low lift pumps with and without engines for agricultural use, agricultural tractors and other agricultural mechanical equipment, cable jointing materials, bicycles and bicycle parts, electrical transformers, etc.

*Ampac International (Pte) Ltd, (Suite 1110), 11th Floor, Shaw Towers, Beach Road, Singapore-0718, is interested to import sesam seeds, ground nuts, dawsen curry paste and dawsen curry powders, dried shark fins, sea cucumbers, sundry goods.

*Al-Hamah Building & Decoration Materials Co., W.L.L. P.O. Box No. 3710, Safat, Kuwait, Arabian Gulf, is interested to import roofing tiles.

*Al-Abraj Metals Co., P.O. Box No.17019, Khaldeyah, Kuwait, Arabian Gulf, is interested to export copper scraps, brass scraps, iron and aluminium scraps.

*Persojen Chemical Co. Ltd, P.O. Box No.314-1714, Tehran, Iran, is interested to import disposable needles and springs, blood bags, first aid boxes and bandages.

*Iran Construct Co. Ltd, Iran Callme Bldg, North Nadershah Avenue, Tehran, Iran, is interested to import spare parts for automobiles, industrial machinery and construction machines.

*Haye International (Pvt) Ltd. P.O. Box No.2035, 32/33, Green Super Market (2nd Floor), Dacca-15, Bangladesh, is interested to import glass manufacturing automatic machines.

*Bidyut-O-Bidyut, P.O. Box No.2787, Ramna, Dacca-2, Bangladesh, is interested to import machineries & equipment all sorts, mineral chemicals and industrial chemicals including paraffin wax, soda ash, caustic soda, bleaching powder, building materials like bitumen, mosaic, tiles, portland cement, iron & steel, pig iron, GCI sheet, iron scraps M S billets hot & cold rolled steel strips and bailing hoops.

ANNOUNCEMENTS

AWARDS

National Environment Fellowship Award

The Government of India has instituted this award to be presented every year on the 'World Environment Day' to an Indian citizen for undertaking advanced studies leading to better understanding of issues concerning environmental conservation, preservation and protection.

For further details write to: The Secretary, Government of India, Department of Science & Technology, Technology Bhavan, New Mehrauli Road, New Delhi 110029.

Chemical Engineer of the Year

The Indian Institute of Chemical Engineers, Calcutta has introduced a new award for "Chemical Engineer of the Year" with effect from this year.

The award will be of Rs 8,000 in cash plus a gold medal.

The basis of the award will be some practical chemical engineering achievement, e.g. some research project, a design, an invention, an evaluation, a process scheme, plant improvement etc., in which the nominee played a predominant role.

Ernest Guenther Award 1980

The American Chemical Society has selected Shri Sukh Dev, director of the Malti-Chem Research Centre, Nandesari, Baroda, India, for the above award for his extensive work in the chemistry of essential oils and related products.

FAIR

TRX '80 Fair

The Second Australian Technology Resources Exchange Fair will be organized by the Australian Innovation Corporation Limited, with support from Australian Government departments of Trade and Resources, Productivity, Science (through CSIRO) and Confederation of Australian Industry, from 14 to 17 October, 1980 in Melbourne.

The Fair will provide opportunity to obtain rights to new developments displayed for the first time and commercially proven technology offered for the first time. It will also provide national and international business opportunities to manufacture/market under licence, joint ventures, investment. Special promotion categories will include metal and plastics fabrication, renewable energy, building material/aids, microprocessors, packaging, waste materials, instruments, food processing.

For further details contact: TRX Fair Coordinator, Australian Innovation Corporation Ltd, 150 Queen Street, Melbourne. Telephone: (03) 67 77 96. Cable: Innovation Melbourne. Telex: AA 31850 "For Innovation".

CONFERENCES

Power System Protection Conference

The Institution of Engineers (India) is organizing a conference on power system protection in Madras from 17 to 20 April 1980 with international technical participation. Topics to be discussed include: protection of EHV power transmission network; protection of thermal and hydroelectric generating plants; programmable equipment/on-line computers for operation, control and protection of power plants and networks; instrument transformer technology; and protection of industrial plant and equipment.

For further information write to: N. Nath, Convener, Conference on Power System Protection, The Institution of Engineers (India), 19, Adam's Road, Madras 600 005.

International Conference on Textiles

The International Chamber of Commerce is holding a 3-day international conference on trade in textiles and clothing in Brussels from May 27, 1980.

The conference is being organized jointly with the Trade Policy Research Centre in London, and clothing industries in both industrial and developing countries, as well as some of the principal negotiators.

PHDC GUIDANCE WINDOW

The Punjab, Haryana and Delhi Chamber of Commerce and Industry (PHDCCI), will shortly set up a one-window system for an entrepreneurial guidance bureau as a common facility centre and as a clearing house for marketing ideas and information.

The system will have a shelf of pre-investment notes, facilities to match prospective entrepreneurs with product lines and locate alternatives for a small unit, counselling services with procedural formalities and an advisory cell for technical review of feasibility/project reports.

The proposed system will work on the principles that are followed by such a bureau already set up by the Poona Chamber of Commerce.

The Chamber will thus provide a macro-link, with aptitude and expertise for detail in the existing institutional framework, which has already been set up by the Government at the Centre as well as in States.

The chamber will also have a cell having access to expertise from the management cadres of willing members of the chamber.

INSTITUTE FOR MANAGEMENT OF RURAL INDUSTRIES

An Institute of Rural Management has been set up at Anand to give training to managers of rural industries. Dr V. Kurian has been appointed the first Chairman of the new institute. The first batch of 60 students will receive training from June 1980.

PUBLICATIONS

Industrial Products Finder Annual Number 1979; edited by Dilip Joshi; Business Press Pvt. Ltd, Surya Mahal, 5 Burjoriji Bharucha Marg, Fort, Bombay 400 023, pp. 379, Price Rs 25.

The above publication provides useful information on new products and processes. At the end of each write-up on a product (along with its picture) the name and address of the manufacturer or the sole selling agent are also given.

The issue comprises 565 write-ups on products, processes, equipment, devices or services available for sale in the industrial market of India.

Indian Export Yearbook, 1979-80; edited by H.R. Suri; Sales Overseas, D-20 Green Park, New Delhi 110 016. pp. 100. Price \$ 15.00 or Rs 80.00.

An introductory feature on India's physiography, with which the book opens, is followed by seven articles on the various facets of India's export trade. This is followed by information on Indian technology, addresses of the organizations of the Ministry of Commerce, foreign offices in India, Indian offices abroad and travel tips. The final part, containing addresses of Indian exporters and manufacturers in a number of leading industries, is the ready made stuff, the foreigner, looking for business contacts and sources of supply in India, would eagerly jump at [*Foreign Tr. Bull.*, 1979, 10(3), 17].

Handbook of Statistics on Cotton Textile Industry (Twelfth Edition) and Annual Report for the year 1978-79 Indian Cotton Mills Federation Textile Centre, 34-P D'Mello Road, Bombay 400 009. Price Rs 20 (for Handbook).

The *Handbook* contains a wealth of information on cotton, yarn, cloth as also on various non-cotton fibres. Data on count-wise production of cloth, area-wise consumption of cotton by mills, production of man-made fibres and yarn, export of textiles - variety-wise as well as area-wise, labour employed in the industry, excise duty on cloth and yarn, production of textile machinery, and world trade in cotton, yarn and cotton cloth are presented in such a way as to facilitate ready reference.

The *Handbook* along with the *Annual Report* would considerably help anybody interested in knowing the current facts about the textile industry. For purposes of comparison figures for earlier years right from 1966 and in some cases from 1962 are also given [*Econ. Trends*, 1979, 8(22), 20].

Worldwide Chemical Directory, Third Edition, Chemical Data Services, IPC Industrial Press Ltd; Dorset House, Stamford Street London SE 1 9LU, England. pp 425. Price £ 50.

The directory is the result of an extensive survey of more than 10,000 chemical and pharmaceutical companies in 122 countries including the East bloc. A separate section lists chemical and pharmaceutical trade associations. A third section lists companies, indexed in alphabetical order [*Chem. Times*, 1979, 6(46), 16].

INDUSTRIAL NEWS DIGEST

Volume 3 Number 5 May 1980

CONTENTS

Editor: S.K. Nag

Asst. Editor: V.K. Sharma

Ed. Asst.: Madhu Bala

Published by the Publications &
Information Directorate, CSIR

Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

Miscellany 1-2

Industry Profiles

Titanium Dioxide 3-4
Salt Industry 4-6

Industrial News

Indian enterprises abroad, R&D spending up, R&D priority on solar energy 7-8

Engineering exports, Matrix printer-cum-proof reader, Bi-polar lead acid battery, Feed property monitor 9-10

Coating resists corrosion, Acrylic resin emulsifier, FPDIL exchange techniques, Gas detection, Furfural, Sodium tripoly-phosphate 10-12

Paper from stone, Dehumidifier, Leather scraps, Better productivity for coke ovens, Oil from waste 12-13

Trade Enquiries 14-15

Announcements

Awards; Fair & Exhibition; Conferences; Chemtech's projects; Corrosion consultancy; Publications 16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate
(CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

Whither US Technology?

Is USA losing its technological edge? It seems so from a report (*Stimulating Technological Progress*) prepared by the Research & Policy Committee of the Committee for Economic Development. The report states that certain public policies in USA are discouraging new capital investment, causing business to shift some of its R&D efforts from longer term goals to more defensive short term ones. Excessive government regulation and uncertain economic policies, according to the report, have increased the risk for prospective investors and current tax policies have reduced the real potential return on investment, channeling those funds away from innovative opportunities toward hedging types of investments. The report concludes that without a speedy correction of public policies inhibiting development and application of new procedures, USA will find it difficult to solve its economic problems and achieve its social objectives.

The Super-chip is Coming

The silicon chip which helped in miniaturizing so many electronic devices by accommodating thousands of transistors in an area no bigger than a fingernail is on the way out. According to British theoretical physicist Dr John Barkar, the silicon chip will be replaced by the super-chip which will be more powerful, cheaper and so small that the naked eye would be unable to see it. The super-chip appears to have come out straight from the pages of a science fiction. For, not only it will be of molecular size and pack millions rather than thousands of transistors but it will think for itself.

There will no longer be individual electronic devices in the normal sense of the word. They would become dependent on their immediate neighbours and couplings would form between them. Eventually, Dr Barkar thinks, there is a possibility that such devices, like living organisms, would spontaneously organize themselves. For example, they would self-heal the damaged region of a chip and will be able to programme themselves. Such self-organizing electronics structures are expected to reach the testing stage within 5 years.

The super-chips, when they become a reality, will dramatically change our way of life by taking over many production control jobs and management decisions. They will also play a big role in defence by creating armies of robot machines like pilotless aircraft and tanks.

Of Solar Energy

Beauty may have fair leaves, yet bitter fruits. So seems to be the case of solar energy, the proposed savior of mankind from the present energy dilemma. Technologists all over the world are breathlessly racing for providing a meaningful exploitation of this source. Till now, we have been hearing promising notes about this wonderful source. So far, it has been held clear of all side effects

which the conventional sources carried with them in one or the other form. Thinking a little ahead, Mr D.C. Winston, associate editor of *London Oil* fears it to be potentially the most polluting and ecologically threatening form of commercial power. Direct conversion through photovoltaic cells have proved feasible alright, but, he perceives, this would require huge tonnage of cadmium, silicon, germanium, selenium, gallium, copper, arsenic, sulphur, and/or other conducting, semiconducting and nonconducting materials of varying availability in world markets. Thermal conversion units would be made of thousands of tonnes of glass, plastics and rubber and will house large volumes of ethylene glycol, liquid metals, Freons and/or other heat movers. If cadmium sulphide cells were used, it would take the entire 1978 world production of cadmium to create only 180,000 MW of installed capacity, 10% of the capacity the world had in 1979. Production and proliferation of such materials would result in massive ecological impacts.

Future of the Automobile

Members of the Worldwatch Institute, Washington D.C., in a discussion concluded that with oil supplies dwindling and the price of fuel soaring, the automobile will have to absorb the full impact of future energy shortages. Unless major changes are made in the role and design of the auto, people will have to turn to public transportation, 2-wheeled vehicles and walking. The continued life of the automobile will rest on the success of efforts to get more miles from each gallon of fuel.

In USA auto sales are down and travel habits are changing. Motorists are leaving their cars in record numbers as public transportation is improved and gas prices climb. In Europe, the USSR and most of the third world, the movement towards auto-centered transport systems has been slow. Although some increased car usage is predicted, the emergence of transport systems dominated by the automobile is not likely in these countries.

INDUSTRY PROFILES

TITANIUM DIOXIDE

Titanium dioxide is the most extensively used white pigment in the paint industry. It is also used in ceramics, synthetic fibres, printing inks and cosmetics.

Titanium dioxide has excellent hiding power, bright colour and good gloss and is resistant to heat and weathering, inert to chemical attack and is non-toxic. It exists in three crystal forms, namely, rutile, anatase and brookite.

Raw Materials

There are two major ore sources for titanium dioxide—ilmenite and rutile. Ilmenite is a titano ferrous ore having the chemical composition $\text{FeO} \cdot \text{TiO}_2$ and is generally found with magnetite or hematite as massive ore deposits. It is also found in beach sand as a result of weathering of the titano-ferrous ore. Ilmenite of beach sand is generally an altered product having a concentration of titanium dioxide as high as 65%. In India, rutile and ilmenite are found in the beach sands of Kerala, Tamil Nadu, Andhra Pradesh, Orissa and Maharashtra. The high grade ilmenite deposits (58%-60% titanium dioxide) at Chavara in Quilon district of Kerala are among the largest in the world.

Rutile is naturally occurring titanium dioxide found in aqueous sedimentary rocks having high concentration of titanium dioxide varying between 85 to 98%. Rutile is found mainly in Australia (where it is found in beach sands along with ilmenite) and in the Florida coast of USA.

Production

The public sector undertaking, Travancore Titanium Products (TTP), Trivandrum, is the only manufacturer of titanium dioxide in India. It started production of anatase in 1950. Even though it has an installed capacity of 24,000 tonnes/yr (anatase 16,000 tonnes and rutile 8,000 tonnes), its production has not exceeded 10,000 tonnes due to various reasons. Although TTP started production of rutile in 1975, the quality was not up to general acceptance of the paint industry.

Demand

The demand of titanium dioxide in India for 1979-80 is estimated as (i) paint industry: rutile 6,000 tonnes and anatase 6,000 tonnes; and (ii) other industries: rutile 1,000 tonnes and anatase 6,000 tonnes.

The rutile grade is almost exclusively used by the paint industry and the entire demand at present is met through imports. For anatase, the total demand can easily be met if proper plant utilization is made at TTP. However, as the production is not up to the expected level, about 2,000 tonnes of anatase was imported in 1978-79.

Future Prospects

With the commissioning of a new public sector plant, Kerala Minerals and Metals Ltd (KMML) at Chavara for rutile titanium dioxide, there can be no shortage for this important raw material for the paint industry. KMML is expected to go into production by 1981. The ilmenite deposit at Chavara, which is estimated to be 33 million tonnes in comparison to the small deposit of rutile, is sufficient for the two units for the next 60-70 years. However, as the deposit is expendable, means and measures to preserve it are to be found out. A new approach towards this problem has been suggested by coating titanium dioxide over a silica core. Such a type of cored pigment is hard to achieve but research towards this needs to be done to conserve such an important mineral for the future.

Consumption and End Uses

Being the best white non-toxic opacifier, titanium dioxide finds use in various industries, the paint industry being the biggest consumer. An approximate pattern of consumption is: paint 63%, paper 14%, plastics 12%, and others 11%.

Rutile titanium dioxide is exclusively used in all architectural and industrial paints where high opacity and weathering resistance is needed. As it is chemically inert, it is the major pigment used for all high performance coatings used for protecting structures and equipments at various chemical industries. It is also the main pigment used for powder coatings.

Anatase having poor outside durability is used for paints for interior use only. However, the chalking of anatase can be advantageously made use of by formulating paints with controlled quantity of anatase.

In plastics, titanium dioxide of very fine particle size is used. These special grades are not suitable for coatings because of low hiding power and exterior durability. Where chalk resistance is required, the normal grades are also used.

As filler in paper industry the major requirement is water dispensability and wire retention. There is general preference to the anatase grade as the opacity difference between rutile and anatase is not very marked, as high pigment volume concentration is used and pigment air interface play an important part. Rutile grades are used for paper laminates which will resist the U.V. degradation of melamine formaldehyde resin for impregnation [*Wlth India - Industrial Products*, VIII, 298; *Chem Times*, 1980, 7(3), 3].

SALT INDUSTRY

Salt extraction in India is confined to the coastal regions. The major salt-producing States are Gujarat, Maharashtra, Andhra Pradesh, Rajasthan and Tamil Nadu. Of these, Gujarat alone accounts for more than 50% of the total production.

The salt industry in India is highly labour intensive. However, the labour productivity is extremely low. As compared to 1,000 tonnes/hectare in USA and

TABLE 1—STATE-WISE PRODUCTION OF SALT
(Qty in thousand tonnes)

	1975	1976	1977	1978	1979*
Andhra Pradesh	264.4	261.4	233.5	292.1	324.4
Gujarat	2937.2	1385.1	2729.1	3207.6	5250.5
Maharashtra	405.8	447.2	554.3	464.2	674.0
Rajasthan	315.5	121.0	286.5	420.5	665.6
Tamil Nadu	732.0	884.1	634.4	950.2	736.3
Other states	88.6	126.0	67.2	104.8	167.5
A Total licensed output	4734.5	3224.8	4505.0	5439.4	7818.3
B Unlicensed output	1099.4	851.6	823.5	1254.1	1754.6
Grand total (A + B)	5842.9	4076.4	5328.5	6693.5	9572.9
*Estimated					

800 tonnes/hectare in France, the highest production per hectare in India is 140 tonnes.

Production

There are both licensed and unlicensed salt works in the country. The former account for about 80% of the total production of salt.

From 50.4 lakh tonnes in 1968 the production of salt went up to 55.9 lakh tonnes in 1970 and further to 68.6 lakh tonnes in 1973. State-wise production figures of salt during 1975-79 are presented in Table 1. It can be seen from the Table that the production fell sharply by 30% to 40.76 lakh tonnes in 1976 from 58.43 lakh tonnes in 1975. This was due to adverse weather conditions. After 1976 the production has increased steadily to reach the estimated figure of 95.73 lakh tonnes in 1979.

Consumption and Demand

Nearly one-third of the salt production is consumed by the industry. The chemical industry alone consumes about 20 lakh tonnes of salt per year. While the amount of salt used by the industry has gone up from 13.7 lakh tonnes in 1968 to between 22 and 25 lakh tonnes in 1979, that for human consumption has increased from 36.5 lakh tonnes to 50 lakh tonnes during the corresponding period.

The total demand for salt at present is estimated at 70 lakh tonnes.

Constraint

The major constraint in the way of higher production of salt has been the inadequate supply of wagons for the movement of salt to the consuming centres. Allotment of wagon for the transport of salt is on a zonal quota basis, but the quotas are never quite fully met. The restriction of movement of salt from the producing regions, specially Gujarat, has often sharply increased salt prices in consuming States like West Bengal, Assam and Orissa.

Export

Since 1977 the government has banned the export of salt except to Nepal and Bhutan. To these countries India exported 1.5 lakh tonnes and 2.5 lakh tonnes of salt in 1978 and 1979 respectively (E.T., 3.1.80).

INDUSTRIAL NEWS

GENERAL

Indian Enterprises Abroad

The Federation of Indian Chambers of Commerce and Industry has prepared a report which reveals that India earned Rs 169 crore by way of repatriation, consultancy fees, exports of plants and machinery through equity and by way of large number of joint and third country projects.

According to the latest figures, India has 192 joint ventures in 35 countries. The break-up is: developed countries, 23; developing regions of South East Asia, 79; South Asia, 13; West Asia, 38 and Africa, 39. Out of the 192 projects, 109 are already under production and 83 are under implementation. These projects cover a wide spectrum of engineering products, capital goods as well as shipping.

While Indian projects in western economies are largely concentrated in service ventures like hotels, restaurants, food processing, etc., a few manufacturing enterprises have also been established such as rice milling machinery and oil engines in West Germany, sophisticated polyethylene products in USA, sal and mango oil in the Netherlands and steel wire ropes in Yugoslavia. As opposed to this, in developing countries Indian ventures are substantially diversified and even encompass capital goods and shipping. Greater acceptance of Indian technology in the developing countries, according to the report is on account of the fact that it helps optimize the use of available factors of production and create a ground for orderly growth by providing intermediary technology (E.T., 5.3.80).

R & D Spending Up

According to a survey conducted by the Department of Science and Technology on research and development in industry, the total R & D expenditure by the productive sector reached the level of about Rs 84 crores in 1976-77, registering an increase of 23.5% over that of 1975-76. This is nearly 18.6% of the total R & D expenditure in the country as a whole. Of the total the private sector in-house R & D units have accounted for Rs 49.5 crores and the public sector R & D units for Rs 34.4 crores.

R & D in industrial sector is essential for generating know-how for the production of goods, assimilation of imported know-how and promotion of international competitiveness. The report contains information and analysis on financial and human resources deployed on R & D activities and partly on a number of ongoing research projects.

The data have been collected from 385 R & D establishments in the productive sector, out of which 326 belong to the private sector and the rest 59 to the public sector.

The analysis shows that R & D expenditure in the public sector rose by 79% from 1974-75 to 1976-77 whereas in the private sector the increase was of 36% for the same period.

The overall annual rate of growth in productive sector worked out to be 22%. The annual rate of growth of R & D expenditure in six major industry groups was higher than overall rate of growth from 1974-75 to 1976-77. In telecommunications it was 79%, cement and gypsum products 55%, fuels 42%, electricals and electronics 32%, and metallurgical industry and industrial machinery 24%.

In terms of the sales turnover, the private sector and the public sector R & D expenditures were on the average of 0.8% and 0.4% respectively. It has been observed that over the years there has been a rapid growth in the number of in-house R & D units especially after the government has started giving encouragement for such units by way of ample subsidies and tax incentives (E.T., 25.2.80).

R & D Priority on Solar Energy Stressed

An official working group on energy policy in its report to the government has recommended top priority for research and development in solar energy and biomass to locate alternative energy sources and also to tackle the complex technological problems of the energy sector.

The report states that the basic thrust of the R & D effort should be oriented towards improvement and adaptation of existing technologies with emphasis on conservation, development of more efficient technologies for utilizing indigenous conventional sources of energy and development of renewable energy technologies.

It is said that coal will continue to be a major source of commercial energy in the foreseeable future and, as such, programmes that raise its production and promote its efficient utilization in all the consuming sectors should receive high priority.

In the oil sector, R & D priorities should be oriented towards maximizing recovery from the oil reservoirs and efficient utilization in major sectors like transport, etc. wherever feasible.

The report also suggests top priority for research and development programmes in the electricity sector in consonance with the power programme.

In the area of alternative sources of energy, the report also stresses the need for developing proper institutional arrangements to promote R & D in a coordinated manner, keeping in view the priorities of the energy sector.

Due to inadequate R & D efforts in the sphere of efficient utilization of petroleum, significant technology gap has developed.

The report calls for higher efficiency of utilization of liquid fuels consumed in a big way in the transport sector.

Referring to the use of alcohol-run IC engine, the group recommends extensive R & D efforts covering optimum blends for use in existing engines and new design of engines to run entirely on alcohol. Efforts should be made for use of ethanol and methanol in diesel engines (F.E., 9.2.80).

ENGINEERING INDUSTRY

Engineering Exports

In spite of the fact that the export of India's engineering goods in 1978-79 registered a 491% increase over 1969-70, the country is yet to make an impact on the world trade of engineering goods. This is borne out by the fact that India's share in the world exports by all countries increased only marginally from 0.1% in 1970-71 to 0.2% in 1977-78.

According to the estimates of the Engineering Exports Promotion Council (EEPC), engineering exports in 1979-80 would be about Rs 600 crores which is Rs 250 crores short of the target. EEPC has attributed the shortfall to the ban on the use of indigenous materials for the export of steel tubes and pipes, bright bars and rods and aluminium conductors. In view of this, there are serious doubts if the Rs 1,000-crore target originally set for 1980-81 can be achieved. The various panels constituted by EEPC for assessing export potentials are yet to come out with any joint projection.

The Commerce Ministry wants a realistic target for 1980-81 which can be reached, as this year will provide the base for reaching a higher level of exports by 1990. EEPC had earlier estimated that engineering exports would reach Rs 10,000 crores at the end of the eighties. Also, EEPC has suggested the creation of a "Ministerial Cabinet Committee" on exports having the ministers for commerce, finance, industry, steel and shipping (F.E., 12.2.80; 22.2.80; B.S., 1.3.80).

Matrix Printer-cum-Proofreader

Swedish-International Press Bureau has designed a new matrix printer, Facit 4540, for use in computerized typesetting especially for newspapers. The machine has a printing speed of 250 characters/sec, and a durability of over 500 million characters. It provides proofs in coded form to permit corrections to be made and allow the space needed for the final printed version to be calculated. Two-colour ribbons make it possible to distinguish typesetting instructions from text. The printer also functions as a printout unit in a highspeed printing terminal, developed by the same company, featuring a keyboard display for 20 characters, a larger buffer for up to 8,000 characters, editing functions, and off-line listing or transmission of selected parts of the buffer.

For further details write to: Swedish-International Press Bureau, Skeppargatan 37, S-114 52 Stockholm, Sweden [Invent. Intell. 1979, 14(11), 470].

Bi-polar Lead Acid Battery

California Institute of Technology's Jet Propulsion Lab (Pasadena, Calif.) has developed a bi-polar lead-acid battery that reportedly will provide better performance and economy for electric vehicles. It plans to build a battery potentially capable of powering an electric car for a range of 150 miles before recharging and with a battery lifetime of 50,000-80,000 miles by using lighter,

improved materials. The bi-polar construction does away with the lead grids that hold electrochemically active lead materials in place in gas powered cars by using thin, lighter-weight conductive sheets (bi-plates) to conduct electricity from one cell to the next. According to calculations, the battery will enable an electric car to go from a fullstop to 60 mph in 12 sec even when the battery is 80% discharged [Tech. Surv. (Predicasts, USA), 1979, 35(51), 6].

Food Property Monitors

A major breakthrough has been achieved by Neotec Instruments Inc., USA, by introducing a number of instruments for accurate monitoring of food properties.

Using the principle of light absorption in the near infrared spectrum by various organic constituents such as protein, oil/fat, moisture, starch, fibres, etc. the instruments are capable of measuring directly the percentage of these constituents in almost all types of food products, just in a fraction of a minute.

With the help of a built-in microcomputer, measurements are taken at 300 or more wavelengths and as many as 50,000 data recordings per sample are computed to give laboratory equivalent accuracy without needing skilled chemists and consumable chemicals during the entire process. The instruments have been approved by the USDA, Canadian Grains Commission and many other important international authorities, and are gaining wide popularity throughout the world. A few instruments have recently entered the Indian market.

Further details can be obtained from Neotec's exclusive sales representative: Eximp Corporation, P.B. No.1017, 1112, Kucha Natwan, Chandni Chowk, Delhi 110006.

CHEMICAL INDUSTRY

Coating Resists Corrosion

Modi Metallizing Syndicate has formulated specialized sprayed metal coatings to protect iron and steel surfaces from oxidation at elevated temperatures. Apart from protection against simple oxidation, the coatings are resistant to chemical attack particularly from sulphurous gases. This is especially important for the protection of steel chimneys. These coatings are available for temperatures up to 1,000°C. Service life of exhaust systems, chimney stacks, furnace components, conveyors, salt bath and melting pots, carburising boxes and ingot moulds is considerably increased with the application of these coatings.

For further information write to: Modi Metallizing Syndicate, 15 A-Z Industrial Estate, Fergusson Road, Bombay 400 013 [Industr. Prod. Finder, 1979, 8(3), 59].

Acrylic Resin Emulsion

The Central Leather Research Institute, Madras, has developed a method for

the preparation of acrylic resin emulsion. The emulsion is a very important chemical for leather auxiliary manufacturers. The demand in India for this binder is estimated to be about 400-500 tonnes/yr. Half of this demand is presently met by indigenous production and the rest imported.

The main raw materials are: acrylic ester monomers (commercial grade); potassium persulphate (pure grade); emulsifiers (nonionic and anionic) commercial grade. The raw materials are not indigenously available and have, therefore, to be imported.

The main equipment is stainless steel reactor with provision for delayed addition, stirring and heating. This can be easily fabricated indigenously. A plant to produce 500 kg of acrylic resin emulsion in two shifts will be economical. The approximate cost of production is Rs 15/kg (B.S., 15.1.80).

FPDIL Exchange Techniques

The Fertilizer (Planning & Development) India Ltd, Sindri has a special group engaged in development and application of ion exchange resin technology. This group has succeeded in developing a technique for water purification. It has developed facilities for evaluation of ion exchange resin characteristics such as exchange capacities, operating capacity, swelling behaviour, moisture content, and stability towards various oxidizing and reducing agents. The Group has also developed process know-how for the manufacture of polyfunctional cation exchange resin from the waste and sludge of coke oven. Besides, the Group has developed bench scale processes to remove phenol from industrial effluents. They are also working for the removal of chromate from cooling lower blown-down water with the help of an ion exchange resin. An ion exchange technique to recover copper from copper bearing ammoniacal effluent from an ammonia plant has also been evolved [*Chem. Take-off*, 1979, 8(12),22].

Detecting Gas in Light Alloys Melts

Strathclyde Industrial Services Ltd, Scotland, has developed a quick, accurate and inexpensive method of detecting gas in light alloy melts for use in foundries. It employs a device available in two models, one for aluminium alloys only and the other for use with all non-ferrous alloys (including aluminium), both comprising a vacuum pump with electric motor. A sample of the metal for testing is poured into a small crucible and allowed to solidify under partial vacuum. The extent of gassing can be gauged quickly from the outward swelling of the top surface of the metal (with gas-free metals, surfaces sink slightly). Density determination can also be undertaken to provide qualitative data, or the sample can be sectioned and porosity visually estimated. The model for aluminium alloys has a bell jar with seals to contain the crucible. Its vacuum can be raised up to 95 kPa by a valve. A water-cooled aluminium jacket replaces the bell jar in the second model. For copper-base alloys, tin is added to the crucible sample to provide the right "skin" for a gas reading. The units are normally fitted with motors operating on 220/230V, 50/60 Hz.

For further details write to: Strathclyde Industrial Services Ltd, 259 Orbiston Street, Motherwell, Lanarkshire, Scotland [Invent. intell., 1979, 14(11), 472].

Furfural from Rice husk

Punjab State Industrial Development Corporation Ltd (PSIDC) has signed the collaboration agreement with Mr C.L. Anand, well known industrialist, for the setting up of a project for the manufacture of furfural from rice husk, an agricultural waste, available in plenty in Chandigarh.

There being no indigenous production of furfural presently, the project will help in import substitution. The project costing Rs 7 crores will have an initial capacity of 3,000 tonnes/yr. The technical know-how is being provided by Societa Italiana Furfurolo of Italy [*Chem. Age India*, 1979, 30(11), 1051].

Process for Sodium Tripolyphosphate

The Fertilizer (Planning and Development) India's Chemical Research Wing has developed and patented a bench scale process based on indigenous rock phosphate for the manufacture of sodium tripolyphosphate.

This chemical is most widely used in synthetic detergent industry and has potentialities of larger industrial applications as deflocculant, as surface cleaner and also in industries like pharmaceutical, cosmetic, food beverages, textile, wood, pulp, paper, metal alloy, etc.

The existing plants and projects under implementation in India are based on imported technology and imported rock phosphate or phosphoric acid [*Chem. Age India*, 1979, 30(11), 1059].

MISCELLANEOUS INDUSTRIES

Paper From Stone

A Soviet inventor has developed a process to make paper from stone which is five times thinner than conventional paper but stronger. It is crush-proof and resistant to heat, cold and water and will meet the requirements of the polygraphic industry because of its transparency and ink acceptance.

The paper is made by impregnating a layer of tiny threads drawn from molten basalt with a resin. The resulting brown strip turns snow-white after chemical treatment (*Engng Times*, 3.1.80).

Indoor Dehumidifier

A Swedish firm has launched a patented new device, which absorbs excess humidity in rooms, cellars, caravans, etc. by purely chemical means without the need to raise temperatures.

The new product comprises a ball of non-toxic, absorbent flakes weighing roughly 400 g fitted over a one-litre container shaped like a bucket. The product - called Torrball - attracts humidity in the course of the formation of hydrates and only ceases to do so when the desired degree of humidity is attained.

The flakes are fully consumed after one to three months and the ball is then discarded, the container emptied, and a new ball placed in position. The non-toxic aqueous solution that collects in the container cannot evaporate. The product's absorbency remains operative in below-zero temperatures, which means that heating need not be left on solely for the purpose of averting damp and mould (*Capital*, 31 Dec. '79).

Leather Scraps

A team of research workers at the Technical Leather Centre in France has invented a new product which incorporates 50% of waste matter, and which will enable 3,000 tonnes of waste leather (out of the 5,600 tonnes from the French tanning industry) to be used again. In addition, this composition will give a material which to some extent will keep the intrinsic qualities of leather which no other synthetic substance has so far been able to do (*Capital*, 31 Dec. '79).

Better Productivity for Coke Ovens

Nippon Steel has introduced a pre-carbon system in its coke ovens in a major advance in its energy-saving campaign. The system is also beneficial in terms of protecting the environment. This is the first time such a system has been used in Japan.

Under the pre-carbon system, coal used for manufacturing coke is preheated to 220-230°C and sent to the coke oven on a closed conveyor. This enables the replacement of up to 20% of coking coal with non-coking coal without any deterioration in the required coke strength, and at the same time raises the productivity of the coke oven by about 65%.

Under the system coal is ground into powder, dried in the drying tower (about 35 m high) into which hot circulation gas is blown in from the bottom. This dries the coal and removes the moisture. After the temperature rises to some 110°C, the coal is sent to the preheating tower (about 55 m high) to increase the temperature further to 220-230°C.

The coal thus dried and pre-heated turns into light, fluid particles like dry sand, and the charging density is increased by 18-20%. The increased density of the coal improves the coking process and produces high strength coke. Moreover, the increased density and pre-heating reduces the coking time by 13-15% and raises the coke oven's productivity by some 35%. Finally, the powdered state of the coal eliminates the need to level the surface of the charged coal with a levelling bar to allow passage of the gas (Hindu, 23.1.80).

Oil from Household Waste

A British research team headed by Dr Noel McCauliffe of Manchester University, Institute of Science and Technology, has claimed that half a tonne of oil can be produced from a tonne of household rubbish. Oil thus produced is of the same calorific value as the North sea oil and as such is suitable for use in heating systems [*Econ. Trends*, 1980, 9(3), 37].

TRADE ENQUIRIES

*A. & R. Globe Im-Ex Inc., C.P. 9850, Ste-Foy, Quebec, Canada GIV4C3. The firm desires to establish mutually profitable arrangement for imports and exports with reputed firm in India.

*K. Farnezhad-H. Gharib, P.O. Box No. 55, Rochester, Minnesota-55901, U.S.A. The firm desires to import jewellery articles, handicraft items, toys, souvenirs and gift items, national clothing, crystal, china and silverware and other products in line with above.

*Productos Quimo Vegetales S.A., Sur-81 No. 269, Col. Merced Balbuena, P.O. Box No. M-1159 Mexico, 8, D.F. The firm desires to import medicinal herbs, natural gums, food products, shellac, dill seeds, incense sticks, fragrances, etc.

*Karen Enterprises, Calle Genral Vives - 79, Las Palmas de G.C., Canary Island, Spain. The firm desires to import electronic goods, readymade garments, textiles, radio cassette, travelling suitcases and bags, imitation jewellery, souvenirs and general novelty merchandise.

*Indecor U.K. Ltd, 101-Conway Street Hove, Sussex-BN3 3LA, U.K. The firm desires to import brass lanterns for lamps.

*Ercopharm A/S, 13-15 Skelstedet, DK-2950 Vedbaek, Denmark. The firm desires to export a very comprehensive range of pharmaceutical products.

*Castellani & Co., P.O. Box No. 1334, Via Rondissone-24, Torino 10155, Italy. The firm desires to import large quantities of flannel in cotton.

*Anyatex Brothers Associate, 102-Jubilee Road, P.O. Box No. 660, Aba, Nigeria. The firm desires to import greeting cards, watches, toys, jewellery, calculators, textile materials, radio cassettes, building materials, cameras, photographic papers, cosmetics, shoes, animal feeds, readymade garments, photo album, etc.

*Mohamed Salem Toumeh, P.O. Box No. 10216, Asrounieh, Damascus, Syria. The firm desires to import padlock, house glove, baby talcum powder, imitation jewellery, keychains, lampblack, toys, etc.

*Alnour Trading & Importing Co. Ltd, P.O. Box No. 3049, Al-Mina Street, Alqasr Road (Near Al-Bokhary Petrol Station), Jeddah, Saudi Arabia. The firm desires to import lumbercore, plywood, solid timber doors, decore-paper, polyester, aluminium, copper, plastic, adhesives for formica, wood and plastic, formica, sanitary equipment, tiles (mosiaco and ceramics), etc.

*Fahed Aboruba & Sons, P.O. Box No. 1833, Medina Mounawara, Saudi Arabia. The firm desires to import fine chemicals, glass ware articles (bottles etc.), plastic raw material and plastic goods, fish seeds and fisheries requirements, machineries, etc.

*Darbar Soap Works Limited, E/52, S.I.T.E., Karachi 16, Pakistan. The firm desires to import toilet soap plant, washing soap plant, synthetic detergent bar and cake plant, synthetic detergent powder plant, chemicals: sodium tripolyphosphate, CMC detergent grade, sodium sulphate, sodium hydrosulphite, sulphonc acid, caustic soda, sopanax, titanium dioxide, tinopal,

lenolin anhydrous, foam compound, zinc oxide, cresylic acid, stearic acid, sodium lauryl ether sulphate, paraffin wax yellow, trilon B or versene or any optical brightner, antioxidant & chelating agent; aromatic chemicals: yara yara, terpeneoline, terpineol, diphenyl oxide, coumarin, benzyl acetate, essential oils of all type, soap colours (pigments and dry colours); books on washing & toilet soap, synthetic detergent bar & cake, synthetic detergent powder, glycerine, fats/oils & edible oils, analysis of detergent soap, tallow/fats & oils, vegetable oils, industrial/commercial monthly magazine/bulletin.

*Kayum & Co., P.O. Box No. 17, Khulna, Bangladesh. The firm desires to contact machine manufacturers, raw materials suppliers and exporters.

*Economy Cycle Industries Ltd, P.O. Box No. 11, Rangpur, Bangladesh. The firm desires to import plants and machinery on turnkey basis for the manufacture of bicycles.

*Nittetsu Jitsugyo Co. Ltd, Osaka International Trade Centre Bldg, 3-51, 5-Chome, Nakanoshima, Kita-Ku, Osaka, Japan. The firm desires to export all kinds of construction machineries such as bulldozer, crane, excavator, generator, air compressor, rock drill, rock breaker, stone crusher and its parts, etc.

*Hashim Corporation, P.O. Box No. 4094, Dammam, Saudi Arabia. The firm desires to import building materials, household appliances, electrical items, etc.

✓ *Ahmad Husain Aly Khaja, P.O. Box No. 20290, Kuwait, Arabian Gulf. The firm desires to import cardamoms, special coffee seeds, barley, special wheat, cashew kernels, etc. ✓

✓ *Al-Harbi Int. Est., P.O. Box No. 46907, Fahaheel, Kuwait, Arabian Gulf. The firm desires to import readymade garments, electrical accessories, utensils, canned food stuffs and other fancy goods. ✓

*Towlid Rowghan Refining Public Co., Ostovar Lashkari, Street No. 724, P.O. Box No. 11-1436, Tehran, Iran. The firm desires to import copper wire, cold rolled steel sheets, electrolytic tin plate, sealing compound, M.E.K. (Methyl Ethyl Ketone), furfural etc.

*J. Laknaheer & Co., Tehranvillaye Gharbi, Khiabaneh Sahpur, Kouche Shaparak - No. 10, Tehran, Iran. The firm desires to import aquarium ornaments, fish food and tropical fish, quartz and electronic watches and clocks, electronic products and sound equipment, toys and novelty items.

*Halimex Co., P.O. Box No. 66, Rasht, Iran. The firm desires to import toothpaste, toothbrush, household gloves, hot water bottles, soaps, baby goods, cleaning powder, gauze bandage, disposable syring, hygienic goods, etc.

*Bengal Enterprise, 2/1 New Baily Road, P.O. Box No. 257, Dacca-2, Bangladesh is interested to import cotton and man-made yarn from India.

*Bangabay Trading Co. Ltd, 7 & 8 Motijheel Commercial Area, GPO Box No. 438, Dacca-2, Bangladesh, is interested to import fibreglass speed boats, out-board motors, marine diesel engines, tea garden machinery, lubricants and greases and handicrafts and also desires to contact firms interested in taking up the service work.

ANNOUNCEMENTS

AWARDS

ICMA Awards

The Indian Chemical Manufacturers Association (ICMA) has awarded the P.C. Ray award for 1979 to Vikram Sarabhai Space Centre, Trivandrum, for development of indigenous technology for the manufacture of polymeric substances and chemicals required in the manufacture of solid propellants for India's space programme.

Citurgia Biochemicals won the award for developing deep fermentation technology for the manufacture of citric acid based on cane molasses.

The award for process designing and process engineering of chemical plants went to Associated Cement Companies (ACC), for designing plants for manufacturing molecular sieves, castable refractories and binders, catalyst supports and ceramic aluminas.

Award for Metal Box India

The CLIO gold statue of New York - the world's most coveted award for excellence in package design - has been awarded to Metal Box India this year for the third year in succession. Metal Box India is the only company in the world to receive this award three years running, a record for Indian packaging.

Gold Key Award

Walchandnagar Industries Ltd, Walchandnagar, Dist. Pune, Maharashtra, was given the 'Golden Key Award' for practicing good value engineering and value management for the year 1979.

FAIR & EXHIBITION

Poznan Fair

India will participate in the 52nd Poznan International Fair in Poland to be held during 3-17 June 1980. The Fair is expected to engineer considerable marketing potential for India's merchandise. The main objective of participation in this Fair is to increase the two-way trade between India and Poland and to promote areas of mutual cooperation in setting up industries in other countries.

Trade Exhibition in Dubai

The Trade Fair Authority of India is organizing an Indian Trade Exhibition in Dubai from 15 to 24 May 1980. The exhibits are likely to include a number of engineering products especially, machine tools, power equipments, pumps, refrigeration equipments, and paper processing equipment besides a host of building materials construction equipment and services.

For further details write to: Trade Fair Authority of India, Pragati Maidan, Lal Bahadur Shastri Marg, New Delhi 110001 or its Bombay Branch, Jhansi Castle, Cooperage Road, Bombay 400059.

CONFERENCES

Management of Technology Exchange

An international conference on Management of Technology Exchange during 13-14 May, 1980 and a Basic Licensing Course on 12 May 1980, will be held at Utrecht. Concurrently with these, the Tech-transfer '80 International Fair for technology exchange will be held.

For details write to: Royal Netherlands Industries Fair, P.O. Box 8500, 3503 RM, Utrecht, The Netherlands.

Conference for Quality Control

The 24th Conference of the European Organization for Quality Control will be held from 17 to 20 June, 1980 in Warsaw, Poland. The theme of the Conference is "Man-Quality-Environment". Main working sessions relate to the following: Man in the overall problem of quality; Scope of the idea of quality and its role; and Production and consumption quality and its influence on environment.

For further details contact: Polis Committee for Standardization, Measures and Quality Control/PKNMIJ/EOQG Secretariat, ul. Elektoralna 2,00.139 Warszawa, Poland.

CHEMTECH'S PROJECTS FOR CHEMICAL INDUSTRY

CHEMTECH Foundation, a public charitable trust has drawn up three projects aimed at benefiting industry and science in general and chemical and process engineering and allied industries in particular.

International Institute For Chemical Technologies

It is proposed that a technical training institute for chemical technologists be established in the State of Gujarat or Maharashtra, where chemical processing and chemical engineering industries are concentrated. The Institute would have a 2-year course of which almost 50% of time would be spent in in-plant training.

Establishment of Information Centre For Chemical Industry And Science

This Information Centre will aim at providing up to date information about various aspects of developments in the industry, science and research. It would hopefully have a computer terminal or satellite terminal, so that relevant information is made available to the industry and science in this branch in India.

Industrial Exhibition Complex At Bombay

CHEMTECH Foundation proposes to play a catalytic role in establishment of an Industrial Exhibition Complex in Bombay, for exhibition of industrial products.

CORROSION CONSULTANCY CENTRE

Under the all-India coordinated project on corrosion and its prevention the Central Electrochemical Research Institute, Karaikudi, is conducting a survey of various industries, collecting information about products and processes for

corrosion prevention. The laboratory can furnish information on various problems faced in corrosion and its control. A nominal charge is made for answering such technical enquiries (general information, Rs 100; detailed information/performance data, Rs 500).

Further details regarding this service can be had from: The Director, Central Electrochemical Research Institute, Karaikudi 623 006.

PUBLICATIONS

Directory of Business Information and Research Centres in India by the National Industrial Documentation and Manpower Centre; 4 South Patel Nagar Market, New Delhi 110 008.

The Directory provides information about the institutions engaged in developing science and technology and promoting trade and industry. The institutions directly or indirectly associated with business, industry and trade have been listed and grouped under various heads such as: Libraries and Information Centres; Chambers of Commerce and Industry; R & D Laboratories, Professional Associations; Research Institutions; Productivity Councils; Management Associations; Industrial Finance and Development Institutions; Export Promotion Councils and Commodity Boards; and Consultancy House in India [*Econ. Trends*, 1980, 9(3), 21].

World Industry Since 1960: Progress and Prospects; United Nations Publication. pp. 422. Price \$ 18.

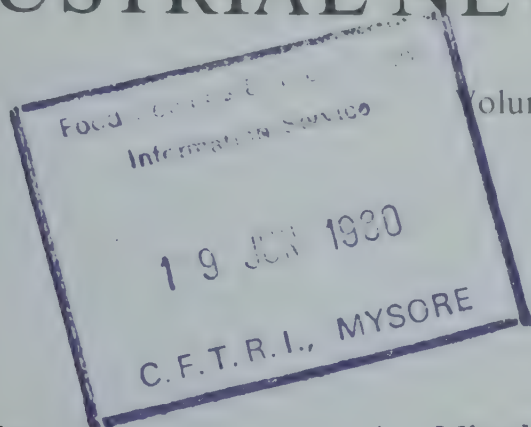
The book is a special issue of the Industrial Development Survey, the theme of which is world interdependence. The survey attempts to find out the international implications of national issues, strategies and activities. It presents us with the evidence of increasing interdependence through the sixties and seventies, and forecasts inescapable, ever-growing interdependence for the future. Following the pattern set by the Lima Declaration, a more equitable international distribution is called for. All nations are cautioned, in their own self-interest, to cooperate mutually or perish individually. This survey of world interdependence is silent on prices and terms of trade as between developed and developing nations (F.E., 30.12.79).

How to Prevent Industrial Sickness by Sudarshan Lall; Navrang, New Delhi. pp. 220. Price Rs 35.

Industrial sickness is universal and common to all industries. According to the author: "The journey from prosperity to adversity is swift and slippery." Often this is due to the fact that timely attention is not paid to danger signals.

There are many causes of industrial sickness and understanding the cause(s) is a necessity before any preventive measure could be taken. The author has presented a detailed classification of various internal and external causes for sickness and their respective cures. He has also recommended various ways to bring about improvements in areas such as production marketing and finance [*Econ. Scene*, 1979, 4(10), 28].

INDUSTRIAL NEWS DIGEST



Volume 3 Number 6 June 1980

CONTENTS

Editor: S.K. Nag

Asst. Editor: V.K. Sharma

Ed. Asst.: Madhu Bala

Published by the Publications &
Information Directorate, CSIR
Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

Miscellany 1-2

Industry Profile

Pesticides Industry 3-7

Industrial News

Cement crisis, Small units growth declines, Heavy industry 8-9

Cine projection lens, Electronic stirrer, Video tape recorder, Poisons detector, Cheaper solar cells, Seawater battery 9-11

MDPE pipes, Synthetic fibre extrusion system, CFTRI know-how, Fumigants, Alcohol for oil, Substitute for carbon fibre, Cracking catalysts, Liquefaction of brown coal 11-12

Gasoline from biomass, Pollution filter, Gasoline to diesel engine, Jute-wool 12-13

Trade Enquiries 14-15

Announcements

Awards; Fairs & Exhibition; India Trade Centre; Regional Testing Centre; PHDCCI for a chain of Export Zones; Publications 16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate (CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

Coal Stages a Comeback

An action-oriented assessment of the prospects of coal in the world energy situation has been carried out by a team of 16 experts from major coal producing and importing countries. The study report entitled *Coal—Bridge to the Future* covers environmental problems, coal production, coal processing and strategies on coal development. It predicts that coal will play a much larger role by A.D. 2000. The re-emergence of coal is attributed to its versatility of use, including convertibility to electricity, synthetic gases, petroleum, and chemical feedstock.

The findings and projections of the study are of special interest to India, which produced 104 million tonnes of coal in 1979-80 and has the ambitious programme of producing 160 million tonnes by 1985, 220 million tonnes by 1990, and 400 million tonnes by the end of the century.

Treasures of the Deep

Hidden under kilometers of water in the oceans are enormous deposits of important minerals. For example, there is enough copper to serve the needs of the world for 6,000 yrs compared to 40 yrs reserves on land; enough nickel to last 1.5 lakh yrs compared to a quantity on land which may last for 100 yrs; and aluminium to meet the world's demand for 20,000 yrs versus a land-based amount which may serve the world for 100 yrs.

Apart from the above, the most important of the deep sea deposits is manganese nodule of which there are about 1.5 trillion tonnes on the Pacific floor alone. these nodules also occur at depths between 3,300 m and 5,500 m in the Indian ocean. Although the nodules contain 40 different metals, their principal component are manganese (29%), iron (6.3%), copper (1.07%), and cobalt (0.25%).

The cost of a deep sea mining operation can be as high as \$50 crores, but in recent times installing of mines in remote places on land has cost nearly twice the amount. Some plus points of deep sea mining are that there are no cartels, like OPEC, in the sea to manipulate prices, no hostile or unstable government to seize assets, and no unfavourable balance of payments problem. Taking all these into account, it appears that deep sea mining could keep metal prices stable for a long time.

Nuclear Energy Has God's Approval

Dr W. Pollard, a scientist-cum-theologian, is a consultant to the Institute for Energy Analysis of the Oak Ridge Associated Universities, Tenn., USA, and an Episcopal priest for 25 years. In a pamphlet, *A Theological View of Nuclear Energy*, Dr Pollard has come up with the observation that over half of the matter in the universe is in the form of naturally occurring nuclear power plants, i.e. stars. Therefore, Dr Pollard stresses, God has made more nuclear power plants than anything else. Consequently, mankind has the green signal from the Almighty to

go ahead and build as many nuclear power plants as it pleases. It is also consistent with the Biblical notion of man's dominion over nature, which is both a privilege and a responsibility that cannot be set aside when it becomes burdensome.

Technology the Japanese Way

Japan is going to make a big bang in the areas of industrial machinery and computers in 1980s. As per reports from the Policy Studies Institute, the Japanese Government has decided to give these two industries a special impetus in the coming years.

The technology p.otion programme is like this. Japan's Ministry of International Trade and Industry (MITI) sponsors several laboratories whose research results are fed to the firms. The Ministry plays the role of coordinator to encourage the groups of firms to build plants together and learn from each other. The MITI also finances R&D either directly or by tax credits.

In 1976, the Ministry spent Rs 18 crores on laboratories, and in 1978 it invested Rs 9 crores in research grants to firms that make machinery for factories. Further, companies also availed tax credits on 25% of the cash they spent on R&D in 1976 amounting to Rs 36 crores.

Same is the approach in the case of computer industry. The Government is providing 40% of the Rs 285 crores that the firms are spending in a 4-year project to make advanced semiconductor chips.

Boris Bugs Boozers

An Australian taxi driver has invented a device called Boris that prevents a motorist from driving if the level of alcohol in his blood is above the legal limit.

In a car fitted with the device, if a red light shows under the dashboard the motorist will have to take a breath test before ignition can be switched on. The driver breathes into an instrument, and if another red light glows, the motorist is over the legal alcohol limit and Boris cuts off the car's ignition system.

INDUSTRY PROFILE

PESTICIDES INDUSTRY

Crops are ravaged by weeds, insects, diseases, nematodes, rodents, mites, etc. In terms of the value of production loss, the damage done by these agents in India is of the order of Rs 5,000 crores/yr. Shares of the spoil for different groups of organisms are: weeds, 1650; pathogens, 1300; insects, 1000; rodents, 300; storage pests, 350; and other pests, 400 crores of rupees.

Production

The pesticides industry in India is relatively young, as substantial use of pesticides to prevent crop losses commenced only in 1948 after the Bengal famine which was characterized by a large destruction of rice crop. The production of pesticides in India commenced in 1952 with the establishment of a unit for the production of BHC.

Presently, about 50 basic pesticides are being manufactured in the country. There are 23 large scale and 10 small scale manufacturing units.

Some of the important producers of pesticides are: Alkali Chemical Corporation of India Ltd, Calcutta; Bengal Chemical and Pharmaceutical Works Ltd, Calcutta; CIBA of India Ltd, Bombay; Hindustan Insecticides Ltd, Delhi; Imperial Chemical Pvt. Ltd, Bombay; Motilal Pesticides, Mathura; and Sandoz Ltd, Bombay.

Production figures of basic pesticides, which include insecticides, fungicides, herbicides, rodenticides and fumigants, for 1977-78 and 1978-79 are given in Table 1. It can be seen from the Table that there was an increase in production of little more than 10,000 tonnes in 1978-79 over the previous year.

Consumption

Figures for the total consumption of various groups of pesticides for the period 1973/74-1977/78, taking into account both indigenous production and imports, are presented in Table 2. It can be seen that after reaching a peak in 1974-75 the consumption of pesticides fell only to pick up again in 1977-78.

India, having 15% of world's population and almost 4% of the world's cropped area has a share less than 2% of world's pesticides consumption. Only about 100 pesticides are available to Indian farmers as against over 1,000 to farmers in USA.

All farmers are not pesticides users. In addition to cost benefit, other factors come into play in determining not only whether to use pesticides but also how much to use.

The constraints to the use of pesticides are: non-awareness of the need of pesticides; lack of knowledge of the product and its usage; lack of purchasing power; and non-availability of the products.

TABLE 1—PRODUCTION OF PESTICIDES
(Qty in tonnes)

	1977-78	1978-79
<i>Insecticides</i>		
B.H.C.	28,674	35,254
D.D.T.	4,175	4,475
Malathion	1,980	2,845
Parathion	1,554	2,242
Metasystox	163	208
Fenitrothion	312	401
Dimethoate	646	721
Phosphenidon	442	563
D.D.V.P.	207	278
Quinalphos	291	379
Phenthoate	56	11
Carbaryl	361	733
<i>Fungicides</i>		
Copper oxychloride	1,019	1,199
Thiocarbamates	1,371	1,662
Nickel chloride	27	48
Organo-mercurials*	141	130
<i>Herbicides</i>		
4-D	444	316†
Nitrofen/propanil	58	25
Puraquat (K.L.)	—	243
Bavistin	—	25
<i>Rodenticides</i>		
Ratafin	11	13†
Zinc phosphide	160	170
<i>Fumigants</i>		
Aluminium phosphide	418	591
Methyl bromide	53	34
Ethylene dibromide	34	40
Total	42,597	52,691

*Production is in terms of 15% and 6%.

†Provisional.

TABLE 2—CONSUMPTION OF PESTICIDES
(Qty in tonnes)

	1973-74	1974-75	1975-76	1976-77	1977-78
Insecticides	38,850	48,345	46,420	41,070	46,570
Acaricides	130	140	150	160	160
Fungicides	10,337	9,600	9,185	8,553	9,685
Rodenticides	150	250	200	290	270
Weedicides	810	715	890	975	1,425
Nematocides	25	30	35	20	20
Plant growth regulators	15	20	25	20	25
Fumigants	150	130	250	830	820
Total	50,467	59,230	57,155	51,918	58,975

TABLE 3—CONSUMPTION PATTERN OF PESTICIDES

	%	Val. in Rs crores
Herbicides	7	11.7
Insecticides	75	125.3
Fungicides	15	25.0
Others	3	5.0
	100	167.00

The group-wise consumption pattern of various pesticides in India is given in Table 3.

The low consumption of herbicides in India is a matter of concern since weeds deprive the crop of 30 to 90% of fertilizer, the costliest input for the Indian farmer. The crops on which herbicides are used (figures within parenthesis denoting % of the total consumption) are: maize (16.8), cotton (15.8), fruits (15.3), rice (10.1), vegetables (9.2), soyabean (8.5), wheat (6.4), sugarbeet (3.9), jowar (2.5), groundnut (2.4), and others (9.1).

Research and Development

Pesticide research in India is carried out by the National Laboratories under CSIR, research laboratories attached to universities and agricultural research institutes and in-house R&D facilities available with a few major pesticides manufacturing companies. The National Laboratories generally undertake chemical process development work for the manufacture of basic pesticides which are already in use abroad and also imported to India. Agricultural universities and research institutes also carry out chemical research towards development of technologies and have got facilities for testing the pesticides for their bio-efficacy. Some private R&D work by some Indian companies have also made significant contribution to pesticides development.

Government has constituted a R&D Coordination Group on Pesticide Research in 1977 to assess existing facilities for pesticides research, to identify the areas for research, to draw a programme for the development and implementation of technologies, to recommend R&D projects to various institutes, and to coordinate the science and technology projects of the public sector units in this field.

Taking into consideration the present state of pesticide manufacture and use, and the future trend for pest management in the country, the necessity for developing adequate research and development capacities has been emphasized. A centralized research and development centre with multi-disciplinary activities having competence to advise the government, industry and public in all aspects of pesticides and pest management has been proposed. With the increased responsibility of the public sector in this field the advisability of establishing this centre as part of Hindustan Insecticides Ltd has been brought out. The main programme would be to adopt and assimilate available technology and to develop further technologies for known products which are currently being used in India as pesticides.

Small scale units are not in a position to put up adequate testing or quality control facilities by themselves and are obliged to depend upon the National Laboratories, universities, etc. Further, the pesticide formulation technology employed by major manufacturers/importers of pesticides are not easily available to the small sector and, even though having substantial capacities, these units are unable to supply quality formulations to the consumers.

Future

It has been estimated that the industry is expected to grow at an average rate of 11-14% per annum; this would imply that the consumption of pesticides would cross the Rs 400-crore mark at today's prices. The latest developments in the pesticide formulation technology, such as extruded type of granules, slow release granules, encapsulated type of formulations, etc., should be kept in mind while assessing and formulating the future needs of the industry.

Exports

Only Aldrin, Aluminium phosphate, DDT, Lindane and some other insecticides are exported from India to Nepal, Tanzania, Burma, Sudan, Thailand, Sri Lanka, Rumania, Jordan, the Netherlands, Japan, Italy, USA, Greece, Iran, Australia, Argentina, etc.

Exports of pesticides for the recent years are given in Table 4.

Imports

Imports of pesticides for the recent years are given in Table 5. During 1975-76 imports were high at 11,561 tonnes but came down to 4,000 tonnes in 1976-77. However, during 1977-78 imports registered an increase reaching a level of 5,536 tonnes due to import of DDT for use in malaria eradication programme and endosulfan for pest management in paddy, cotton and vegetable crops.

TABLE 4—EXPORTS OF PESTICIDES
(Qty in tonnes; val. in Rs thousand)

	Qty	Val.
1975-76	1530.4	6742.7
1976-77	594.9	16,110.2
1977-78	1072.3	14,357.2

TABLE 5—IMPORTS OF PESTICIDES
(Qty in tonnes; val. in Rs million)

	Qty	Val.
1975-76	11,561	233.2
1976-77	4,000	85.4
1977-78	5,536	120.2

Out of the 50 or so basic pesticides manufactured in the country less than 25% are based on indigenously developed process/technology while the rest are based on imported technology. Items like DDT, carbaryl, monocrotophos, fenitrothion, DDVP, BHC, etc. are imported from UK, USA, Switzerland, Spain, Canada, Israel, Italy, USSR, France, Japan, Poland, Denmark, etc. because of inadequate indigenous production. Large number of pesticides are imported because of non-availability of technology for creation of manufacturing facilities in India [*Wlth India—Industrial Products*, VI, 45; *Econ. Scene*, 1979, 4(12), S-3-33].

INDUSTRIAL NEWS

GENERAL

Cement Crisis

The cement industry with 56 functioning units and an aggregate capacity of 24 million tonnes is currently in the grip of severe crisis due to shortage of coal, power and wagon supply.

While production up to the end of December 1979 was lower at 18.24 million tonnes compared to 19.6 million tonnes in 1978, the official demand projection for 1980-81 is 27.99 million tonnes, based on 8% cumulative growth in demand. Therefore, a total deficit in supply of 10 million tonnes is considered likely, even if the 1979 output is more or less maintained.

Considering that the present installed capacity in the cement industry is 24 million tonnes, an annual production of 22 million tonnes is possible if only power and coal are freely available to the manufacturers.

The crisis in the production has resulted in an increase in the cost of production by Rs 28 to Rs 30/tonne.

The present demand of cement could be easily met and a surplus built up if the capacity of the existing units is doubled with adoption of the latest technology (F.E., 28.2.80; 1.3.80).

Small Units Growth Declines

The growth rate in the output of small scale industry sector in 1979-80 has declined sharply to 4.2% compared to 12.8% in the preceding year.

According to the latest estimates made by the Development Commissioner, Small Scale Industries, the production in 1979-80 is expected to be Rs 15,550 crores compared to Rs 14,900 crores in the preceding year. In 1977-78, the output of small industries was valued at Rs 13,200 crores.

There has been a significant slow down in the growth of registered and unregistered units. Registered units increased by 39,000 to 3.23 lakhs in 1978-79, but in the current year it is expected to witness a rise of only 36,000. Unregistered units increased by 26,000 to 4 lakhs, while in the current year they are expected to touch 4.13 lakhs only.

Total units as at the end of the current year are expected to be 7.72 lakhs as compared to 7.23 lakhs in the preceding year. In 1977-78, the total number stood at 6.63 lakhs.

The growth in employment including self-employment is also estimated to have received a setback in the current year. As at the end of the current year, the employment may touch about 70 lakhs as compared to over 63 lakhs at the end of the preceding year. At the end of 1977-78, the employment stood at almost 59 lakhs.

The exports of small industry products have now grown to Rs 941 crores, more than double of what it was five years ago. However, the share of small

industries in the total exports varied between 15.5 to 16.5% during the last five years. In the case of non-traditional goods, the share of small units exports is nearly 40% (F.E., 28.3.80).

Heavy Industry

The Department of Heavy Industry has envisaged a production growth of 11% for the 16 units under it for the current financial year.

The production target is fixed at Rs 1,408 crores for 1980-81 against Rs 1,271 crores last year. The production during the first nine months of 1979-80 was worth Rs 781.75 crores, about 87% of the target.

The production of these units has been steadily going up. In 1978-79, their output was worth Rs 1,058 crores against Rs 823.78 crores the previous year, an increase of 23%. The production growth in 1979-80 over the preceding year is also expected to work out to nearly 10%.

According to the estimates, these units are expected to make a profit of a little over Rs 10 crores for 1979-80. The profit projected for the current financial year is about Rs 33 crores. The units, under the Department as a whole, had incurred losses of Rs 11.22 crores and Rs 13.40 crores during 1977-78 and 1978-79 respectively. Most of the units except the Bharat Heavy Electricals Limited, Hindustan Machine Tools, Tungabhadra Steel Products, Triveni Structural and Richardson and Cruddas are incurring losses.

The Department had to take over a number of sick units, namely, Burn Standard, Braithwaites, Bharat Brakes and Valves, Jessops, Wagon India Limited, etc. These units are yet to be fully rehabilitated and diversified.

The rest of the units, namely the Heavy Engineering Corporation, Mining and Allied Machinery Corporation, Bharat Heavy Plates and Vessels, Scooters India Limited, Bharat Pumps and Compressors Limited are also suffering from various constraints (F.E., 3.4.80).

ENGINEERING INDUSTRY

Cine Projection Lens

The Central Scientific Instruments Organization, Chandigarh, has developed a high aperture projection objective used in 16 mm cine projectors for projecting audio-visual films. The optical system is of petzval type and consists of 2 widely separated cemented doublets. Focal length is 51 mm and relative aperture is 1:1.6.

For further information write to: National Research Development Corporation of India, 61 Ring Road, New Delhi 110 024 [Industr. Prod. Finder, 1980, 8(4),14].

Electronic Stirrer

Toshinwāl Instrument, Madras, has developed a new solid state electronic stirring system. It consists of a magnetic stirrer and stir control unit with one or more stirrers, e.g. low profile stirrer, hot plate stirrer and stir mantle. Heating and

stirring operations are independent. The solid state design provides high reliability, efficient power utilization and precise reproducibility of the set speed. It is available up to 5 litre capacity. The smallest stirrer is of approximately 80 mm diameter and 100 mm height.

For further details contact: Toshniwal Instruments, 9 Blackers Road, Mount Road, Madras 600 002 [*Engng Times*, 24.1.80].

Video Tape Recorder

Weston Electronics Ltd, has been granted licence for manufacturing video tape recorders for mass communication and entertainment. It has been developed with indigenous know-how and assistance of the R&D departments of Weston Electronics Ltd. These VTR's can be used in ordinary TV sets with minor modifications [E.T., 16.2.80].

Poisons Detector

The chemistry department of the University of Edinburgh, and Shannon Southern Products, have developed a poisons detecting machine. This machine, a liquid chromatograph, analyses the quantity of poison present in the patient's body.

This machine pumps a sample of blood or urine, under a pressure 20 to 600 times higher than atmospheric pressure, through a 10 mm long stainless steel tube of diameter 5 mm. The different chemicals present in the sample pass at different speed through the finely packed silica. The number and quantity of chemical components are revealed by a recorder [*New Scientist*, 1979, 83(1168), 370].

Chaper Solar Cells

Researchers at Lamar University and Louisiana University have developed a new technique to make cheap solar cells.

The process of purification of silicon is cheap because it recycles the chemicals required in the various purifying steps. Hydrogen, silicon tetrachloride and low-quantity silicon are fed into a hydrogenator to form chlorosilanes. These are distilled to remove impurities and separate the components. The resulting silane is reduced to pure polycrystalline silicon by pyrolysis and the hydrogen is compressed and recycled [*New Scientist*, 1979, 83(1168), 522].

Seawater Battery

Japan Storage Battery Co. (Kyoto, Japan) has designed a new, efficient and durable seawater battery which uses lead chloride for its positive plate. The battery generator uses seawater as its electrolytic solution. After rigorous environmental tests, the firm has ensured that the new cell is long lived and resistant to all adverse natural conditions in seawater. The cell's positive plate is produced by adding a conductive agent like acetylene black or graphite to a powdery form of lead chloride blended at 5-15%, turning the mixture into a paste

via some bonding material, and coating an expanded copper plate with the paste to 1 mm thick, and then pressure-molding and drying the plate [*Tech. Surv. (Predicasts, USA)*, 1980, **36**(8),5].

CHEMICAL INDUSTRY

MDPE Pipes

Solvay and Cie, Brussels, have developed medium density polyethylenes for the manufacture of pipes and fittings intended for the transportation and distribution of gas. The base polymer is made by direct polymerization of ethylene and an alpha-olefin according to a special Solvay process, and not by mixing polyethylenes of high and low densities [*Chem. Age India*, 1979, **30**(11), 1059].

Synthetic Fibre Extrusion System

J. Mackie & Sons, Belfast, Ireland, has developed a synthetic fibre extrusion system that links spinning and texturizing processes. The Fibre M system, which can process undrawn synthetic fibres up to 4,000 m/min, forces the yarn into a steam-heated chamber where an initial 'plug' forms, which is then fed directly into a setting/texturizing chamber to yield a material with improved properties. Fibre M is available in 2 forms, 1 for 40-1,000 denier yarns and 1 for the 1,000-3,000 denier range, and is recommended for polyamide, polyester and temperature-sensitive polypropylene materials [*Tech. Surv. (Predicasts, USA)*, 1979, **35**(49), 3].

CFTRI Know-how Goes Abroad

A Malaysian firm has taken up the process developed by the Central Food Technological Research Institute (CFTRI), Mysore, for production of oils and oleoresins (primarily pepper extractives) and has set up a modern integrated spice processing factory at Bakar Arang Industrial Estate, Sungai Petani, Kedah.

A Nepalese firm, Western Nepal Katha Mill, Nepalgunj, is setting up a unit for the production of ginger oleoresin and oil, using the CFTRI process. The laboratory has been retained by the firm as project consultant to set up a complete production unit in a suitable place in Nepal.

Fumigants

Trials conducted by the Central Food Technological Research Institute (CFTRI), Mysore, under laboratory and warehouse conditions have shown that ethyl and methyl formates manufactured by a firm in India are effective fumigants to protect stored food products from insects. Several tonnes of grains, including wheat, seed-paddy, pulses, spices (such as chillies, turmeric and cardamom), areca nuts, tapioca chips and coconut meal have been fumigated successfully with these formates using the Durofume technique developed by the laboratory. This technique ensures safety to both operators and consumers. Ethyl formate has also been found to be an effective rat burrow fumigant.

Alcohol for Oil in Brazil

Brazil's Chemical Industry is aiming to replace 1/2 of its oil consumption with alcohol and other alternative sources by the mid-1980s. The plan would require investments of \$5 billion in 1980-85 to boost alcohol capacity to 10.7 billion litres/yr, vs the current 4 billion litres/yr. Before 1990, half of all Brazilian autos will be running on hydrated alcohol (96% alcohol/4% water), with the rest using 80/20 gasoline/anhydrous alcohol [*Tech. Surv. (Predicasts, USA)*, 1979, 35(49), 9].

Substitute for Carbon Fibre

The Central Leather Research Institute, Madras, has developed an Indian substitute, acrylo nitrile (PAN) fibre, a precursor to carbon fibre, for imported carbon fibre. Earlier it was imported from the UK and Japan who have refused to part with their technical know-how.

Cracking Catalysts

United Catalyst India Ltd, Bombay, has manufactured cracking catalysts for endothermic and exothermic gas generators for nitrogen gas (99-85% purity). They are used in industries for annealing aluminium sheets, copper and other non-ferrous metals, blanketing and conveying inflammable and explosive liquids and solids, and for purging pipelines and tanks in refineries and chemical/ petrochemical industries.

For further information write to: United Catalysts India Ltd, 240 Dr D.N. Road, Bombay 400001 [*Industr. Prod. Finder*, 1980, 8(4), 14].

Liquefaction of Brown Coal

Victoria State Government (Australia) and 4 Mitsui (Japan) firms are preparing a joint feasibility study for commercial liquefaction of brown coal. If the technology proves commercially feasible, the group will design by 1983 a 18,000 million tonnes/day plant. The initial production target is 10,000 bbl/day of light quality oil. The capacity equivalent in steam coal is 6,000 million tonnes/day [*Tech. Surv. (Predicasts, USA)*, 1980, 36(7), 7].

MISCELLANEOUS INDUSTRIES

Gasoline from Biomass

According to Paul E. Weiss and coworkers of Mobil Research and Development Corporation, Princeton, N.J., products of biomass such as corn, castor and jojoba oils as well as Hevea latex can be converted in high yields to gasoline by passage over zeolite catalysts at 450°-500°C. Gasoline yields are 60% from corn oil (essentially tristearin), compared with 50% yields from methanol. Latex depolymerizes before conversion. Fat and oil molecules adopt conformations that enable them to enter zeolite interstices, resulting in high yields of C₆ to C₉ aromatics [*Chem Engng News*, 1979, 57(41), 18].

Pollution Filter

Technion (Israel) is developing a novel type of filter to reduce industrial pollution, which uses ordinary sand as the filtering medium. When exhaust gases carrying small solid or liquid particles are forced to pass through such a filter, the pollutants tend to adhere to the sand granules, allowing only clean gas to leave. However, this tends to clog the filter, gradually reducing its usefulness. This problem is solved through a constant process of regeneration. The sand filter medium flows continuously at right angles across the line of gas movements, discharging dirty granules while introducing clean ones. Dust covered granules are cleaned outside the system and reintroduced for another round of effective filtration. In addition to ecological protection, such filters may be applied in coal fired power plants where hot combustion gases contain fly ash, which tends to erode turbine blades [*Tech. Surv. (Predicasts, USA)*, 1979, **35**(49), 16].

Gasoline Engine to Diesel Engine

The above conversion is achieved by replacing all the pistons of the gasoline engine with specially designed pistons and making other minor modifications. The special piston has a flat end with a dome extending over more than half its area. The dome contains a combustion chamber into which the gases are forced when the piston is moved. The gases are compressed and the diesel fuel injected into the combustion chamber is ignited. No spark is needed [*Tech. Surv. (Predicasts, USA)*, 1980, **36**(2), 12].

Jute-Wool

The Central Sheep and Wool Research Institute (CSWRI), Malpura, has developed know-how for use of jute wool blends for the wool carpet industry. The new technology can supplement the availability of wool by at least 30%, since 30% blend of jute with 70% of wool has been found acceptable in all respects. This will also reduce production cost without in any way affecting the quality of the end product, i.e. carpet.

The use of jute in carpet manufacturing would also be beneficial to the jute growers and industry which are presently in distress. The replacement of jute by other types of fabrics has posed many problems. The blended carpet manufacturing will give the jute industry a solid backing of 50 million kg, even at the present level.

CSWRI is making yet another experiment of blending polypropylene with wool for carpet making. The institute has manufactured various samples of blend yarn with 10, 20, 30, 40, 50, and up to 85% blend with different types of wool (E.T., 16.3.80.)

TRADE ENQUIRIES

*Lime-back Enterprises Ltd, 45-Livingston Road (209), West Hill, Ontario (Toronto) M1E 1K8, Canada. The firm desires to deal in furniture, automobile parts, rotating houses and rotating restaurants, material for concrete glassblowing shops (complete installations), sports equipment, glassware for labs, museum material, tools, rust remover, cosmetics, nylon, PVC brushes & brooms, brush making machines, souvenirs, novelties, power supplies machinery, machines to make brake pads, wheel weights, medical equipment.

*Shells International Inc., P.O. Box No. 1827, Fort Myers, Florida-33902, USA. The firm desires to import commercial shells, handicraft goods, beads, shell novelties, brass products, oil paintings and frames.

*Baklava International, P.O. Box No. 868, Fair-field, IA-52556, USA. The firm desires to import edible gold leaf (barak), finest quality ingredients such as almonds, ghee, honey and orange juice.

*Jorge Tricci, Casilla Correo-10, 1822-Valentin Alsina, Argentina. The firm desires to import washed cotton wiping rags.

*Intragen Ltd, 10-Pycroft Place, St. Heliers, Auckland-5, New Zealand. The firm desires to import readymade garments and knitting yarn in nylon or polyester.

*Ghana National Trading Corporation, P.O. Box No. 67, Accra, Ghana. The firm desires to import vitamins, provitamins and other medicaments, woollen blankets, vehicle tyres, bicycle tyres, inner tubes for bicycles, domestic gas stoves, domestic aluminium ovens, needles of steel, diesel engines, tractors and implements, household hand sewing machines complete, corn mills, oil mills, rice hullers, flour dough kneaders, electric table and standing fans, electric irons, electric kettles, bicycles and exercisers, leather footballs, spectacle frames, TV games, etc.

*Omowu Akperi Mercantile Enterprises (Nig.) Ltd, P.O. Box No. 815, Warri, Bendel State, Nigeria. The firm desires to have representation of manufacturers and exporters.

*Akpautuk International Marketing Co., 15A Palm Street, Calabar, Cross River State, Nigeria. The firm desires to import readymade garments, household clothing, footwears and hand bags.

*Tecnarco, P.O. Box No. 205, Jounie, Lebanon. The firm desires to import builder hardware and tools.

*Daoud Ahmad Salameh Trading Stores, P.O. Box No. 926245 (Abdaly), Amman, Jordan. The firm desires to import hardwares and hand-tools, agricultural implements, abrasive papers, grinding wheels, rubbing bricks, fluorescent lighting fittings and parts, electric wiring accessories, lighting fixtures, etc.

*Rifai & Massarani General Trading & Contracting, P.O. Box No. 112, Homs, Syria. The firm desires to engage skilled labourers to work outside their country.

*Mitsubeni Enterprises, P.O. Box No. 908, Jinja, Uganda. The firm desires to import 72,000 cotton bales.

*Fahd A, Al Mena'ei Est, P.O. Box No. 41555, Riyadh, Saudi Arabia. The firm desires to import decoration items, curtains, lighting and electrical items, false ceiling material, furniture, building construction materials, etc.

*Al-Taqi Trading Agencies, P.O. Box No. 4063, Hodeidah, Yemen Arab Republic. The firm desires to import steel trunks, handtools, safety razor blades, etc.

*Sultan Trading Est., P.O. Box No. 24677, Kuwait, Arabian Gulf. The firm desires to import all kinds of readymade garments and knitwears, knitted fabrics and textile piece goods.

*Abdulla Awad Al-Khadair & Sons, Trading & General Cont. Co., P.O. Box No. 46715, Fahaheel, Kuwait, Arabian Gulf. The firm desires to establish business relations with reputed firms in India.

*Al-Ishara Exhibition, P.O. Box No. 34051, Idailiya, Kuwait, Arabian Gulf. The firm desires to import electrical goods and accessories as also bulbs of various quality, ceiling fans, heater and parts, and other electrical goods.

*Mohammad Ali Abedeyan, 81, Pasaj Mobasser, Koucheh Nazemulateba, Ekbatan Avenue, Tehran, Iran. The firm desires to import agricultural machinery and equipments, machineries and equipment for home industries, toy making machinery and equipment, stationery making machineries, household appliance, kitchenwares, electrical material and building construction materials, pipes, toilet fittings, chimney for kerosene lantern, gas mentles, and other components for lanterns, frozen meat, live sheeps and calves, butter, cheese, corn oils and corns.

*Khawja Traders & Sports Land, 268, Nawabpur Road, Dacca-1, Bangladesh. The firm desires to import football, hockey sticks, anklets and knee-cups.

*Sea-Queen Corporation, 950-B Amir Market, Khatungunj, P.O. Box No. 1002, Chittagong, Bangladesh. The firm desires to establish business relations for import and export with reputed firms in India.

*Trade Adviser, 10/2, A.C. Roy Road, First Floor, Armanitola, Dacca-1, Bangladesh. The firm desires to import GI pipes, ERW steel pipes, channel bar, angle bar, tie bar and Z-bar, etc.

*Trading Corporation of Bangladesh, HBFC Building, 22, Purana Paltan, Dacca, Bangladesh. The firm desires to export wet blue leather.

*Orient Shine Trading, Suite 302, Central Building, 1-2 Magazine Road, Singapore-0105. The firm desires to contact manufacturers of electronic products.

*Antenna Engineering Asia Pvt. Ltd, Suite 827, 8th Floor, World Trade Centre, 1 Maritime Square, Singapore-0409. The firm desires to export antennas and accessories to be used in mobile services, land and marine, point-to-point communications, military systems, navigational aids, broadcasting and CATV systems.

ANNOUNCEMENTS

AWARDS

Export Awards for Indo-German Ventures

Awards for outstanding export performance were given by the Indo-German Chamber of Commerce to the following Indo-German joint ventures: Tata Engineering & Locomotive Co. Ltd, Buckau-Walf New India Engineering Works Ltd, Gedore-Werkzeugfabrik, and P.S. Sankaralinga Nadar.

At present about 90 Indo-German joint ventures are in operation in India.

Import Substitution Award

Stainco Enterprises Pvt. Ltd, a small partnership firm of engineer-technocrats based at Faridabad, has been given the import substitution award for designing a completely indigenous spray drying plants for powdered milk and several indigenous products.

Prof. J.G. Kane Memorial Trust Award

Nominations are invited for an Award (Rs 5,000) for outstanding contribution to the advancement of chemical, agricultural or allied science/technology in the field of oils, fats and related subjects.

Nominations with evidence of outstanding contributions may be sent to: The Hon. Secretary, Prof. J.G. Kane Memorial Trust, c/o Dept. of Chemical Technology, University of Bombay, Matunga Road, Bombay 400019.

FAIRS & EXHIBITION

Phototech 80

Phototech, international photo technology fair, will be held at World Trade Centre, Singapore, from 20 to 23 November 1980. Leading manufacturers of photographic materials, components and equipment will participate in the fair.

For further information write to: Phototech, Mecom Private Limited, 36 Prinsep Street, Singapore 0718, Republic of Singapore.

Bucharest International Fair

The 6th Bucharest International Fair will be held in Bucharest, Romania, from 9 to 18 October, 1980. The products on display will include: Installation, equipment and outfits for the oil and gas industry; Outfits, equipment and installations for the mining industry; Equipment, installations and metals for the metal-working industry; Machine tools for metal processing; Machines, apparatus and accessories for welding; Pumps, compressors, power engines, etc.; Machines, apparatus equipment and installations for the generation transport, distribution and control of electric power; Machines, installations, equipment, outfits, designs and licences for telecommunications and the electrical

engineering industry; and Apparatus, equipment and installations for electronics and automation.

For further information write to: The Fair and Exhibition Company, The Exhibition Complex-1, Piata Scintei, Bucharest (Romania).

Interkama 80

The international congress and exhibition for instrumentation and automation will be held from 9 to 15 October 1980, at Dusseldorf, Fed. Rep. of Germany. The event includes the international exhibiton; the "Scientific Congress" which opens on 8 October 1980; seminars organized by the exhibitors; and a special exhibition called "Applied Research" to facilitate transfer of technology between research institutes and the industry. 1,000 firms representing 25 countries are expected to participate.

For further information write to: Indo-German Chamber of Commerce, Maker Towers E, 1st Floor, Opposite World Trade Centre, Cuffe Parade, Bombay 400 005.

INDIA TRADE CENTRE

An exclusive India Trade Centre has started functioning in Brussels from February 29.

The centre, which will be the first of its kind to be set up abroad, is financed by the European Economic Community (EEC) and is a symbol of EEC's active participation in promoting India's trade with West Europe.

The trade centre will collect market intelligence for Indian products. It will also select distribution channels, organize ware-housing for Indian products and help in setting up joint ventures.

REGIONAL TESTING CENTRE

A Regional Testing Centre (Northern Region) has been set up by the Government of India at New Delhi for testing the products of the small scale industries to boost up their quality and reliability. The four disciplines at the centre are: chemical, mechanical, metallurgical and electrical.

For further details contact: Director, Regional Testing Centre (Northern Region), Small Industries Service Institute, Okhla, New Delhi 110 020.

PHDCCI FOR A CHAIN OF EXPORT ZONES

The Punjab, Haryana and Delhi Chamber of Commerce and Industry has suggested the setting up of a chain of export zones in areas where particular industries are concentrated to boost the exports.

In a memorandum submitted to the Tandon Committee which is working out India's export strategy for the 1980s, the chamber feels that export zone for garment near Delhi, for sports goods near Jullunder, for woolens near Ludhiana and for finished leather and leather goods near Agra could be set up to enable the exporters step up their exports.

PUBLICATIONS

Concise Encyclopaedia of Industrial Relations by Arthur Marsh; Gower Press, England, Agents in India: B.I. Publications, 18, Lansdowne Road, Bombay 400 039. pp. 423. Price Rs 300.15.

This unusual reference book is not only practical but proves eminently readable. The entries cover terms and concepts used not only in industrial relations but also in related areas of economics, history, psychology and management. Some of the entries pertain to local situation in Britain and have no relevance for the Indian reader.

However, it is a good reference book for trade unionists, personnel and training officers, managers, researchers, industrial relations specialists, labour officers, journalists and academics. There is an excellent 70-page bibliography on every facet of industrial relations and management (F.E., 11.2.80).

Rubber Directory of India—1978-79, compiled by Kuryan Kuryan and Krishna N. Devadiga; Phillips Publications, 4th Floor, Noble Chambers, Parsi Bazar Street, Bombay 400 001 (Sole distributors: Hemkay Graphic Service, Ground Floor, 129, Mody Street, Bombay 400 001). Price Rs 70.

Divided into seven sections, the directory provides detailed information on men and matters in the rubber industry. The opening section gives general information about rubber and user industries, who's who, etc. Plantation, rubber goods manufacturers, raw material suppliers and machinery and equipment are dealt with in separate sections. Exports of rubber goods and allied issues have been covered in the penultimate section and this is followed by "statistics and economic review". This section is very useful as it provides data on area, production, consumption and prices in India as also in the world excise duty on rubber, etc (F.E., 28.1.80).

Chemical Information Handbook, 1978-80; Shell International Chemical Company Limited, Shell Centre, London. pp 94. Price £ 1.50/copy for orders of 6 or more.

The Handbook is divided into four sections. The first section starting with scope of chemical industry gives data on demands, supply, sale proceeds and consumption, trade, investment, and list of the major companies in the world.

Section two deals with chemicals from petroleum. The chemical interests of Shell companies, and information on manufacturing interest of Shell groups are given in the third section. Section four deals with three appendices on trade names of industrial chemicals, brief details of some of the world's major chemical companies, and a list of reference books [*Chem Times*, 1980, 7(4), 2, 16].

INDUSTRIAL NEWS DIGEST

Volume 3 Number 7 July 1980

Editor: S.K. Nag

Asst. Editor: V.K. Sharma

Ed. Asst.: Madhu Bala

Published by the Publications &
Information Directorate, CSIR
Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

CONTENTS

Miscellany	1-3
Industry Profile	
Paints and Varnishes	3-4
Toothpaste Industry	4-6
Industrial News	
Industrial production, IDR act, Weights and measures, More industries	7-8
Engineering exports, Mini generator, Carbon analyser, Template recorder, Electronic dust precipitator	9-10
Plastics and linoleum export, Nitriles, Fuel gas, Herbicide, Organo tin stabilizers	10-12
Solar control glass, Thin-walled container, Percolator, Processed food	12-13
Trade Enquiries	14-15
Announcements	
Awards; Conference; Fairs; Excise, Customs Information Cell; Marketing Centres; Publications	16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate
(CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

How Japan Manages its Economy

Thirty years ago Japan's war-shattered economy was little more than one third the size of Britain's. Today, the Japanese GNP exceeds the combined total of Britain and France.

According to *Time* magazine, the Japanese variant of economy cannot be readily emulated, except by a few Asian countries with similar backgrounds. Japan's disciplined workers display an almost fanatic loyalty to their companies, and paternalistic employers reciprocate by all means. In Japan, leaders of business, banking and government are members of a unitary elite and they have a snug relationship. The nation's power elite, which shapes and guides the course of the economy as a whole, practises a democratic ideal which has enabled the group-oriented Japanese to apportion wealth and nurture growth in one of the world's most cramped and populous countries.

Japan depends on imports for 99.7% of its oil, as well as all the coal, iron ore and other raw materials required to keep production channels humming. To soften the blow of rising prices of all such inputs, the trio of banking, business and government has pursued an effective policy of slowing the growth of resource-intensive industries such as steel and petrochemicals and channeling more of the country's capital into knowledge-intensive industries like micro-electronics and computers. This is one reason why throughout most of the energy-dazed 1970's Japan held inflation relatively low and employment high, a record that is the envy of more bountifully endowed nations.

Though Japan's domestic markets are highly competitive, Japanese businessmen and government officials do not see one another as adversaries but collaborators on behalf of the economy. When the government decides to encourage an industry, as it did with steel in 1950's, autos in 1960's and TV and computers in 1970's, a mighty machine goes into action. The banks come forward to make low interest loans to manufacturers, and the government gives up to 50% subsidy to an enterprise based on new technology and all other incentives in cash or kind. The government also knows how to rescue a sinking industry.

Procedures for giving the public a hand in making broad changes in policy are built right into the political system. Though responsibility for overall economic policy rests with the Premier and his Cabinet, all government departments and agencies have policy study groups that range from a handful to 200 or more businessmen, scientists, lawyers, journalists, farmers and others. Usually the outside advisers approve departmental actions, and sometime policy initiatives are scrapped. For example, to compensate for a 1980 budget deficit, the finance ministry last autumn recommended a corporate tax increase. It was shelved when the businessmen on the panel convincingly argued that the move would throttle economic growth.

Consensus building sometimes takes years, but when urgent action is needed the government resorts to administrative guidance, a sort of friendly persuasion

by which government officially recommends certain action, leaving the follow-through to industry itself. A firm ignoring guidance is considered an outcast in industrial circles, and the government can take it to task.

Japan's robust glow comes not so much from genuine growth as from enormous and potential inflationary deficit spending which last year totalled 40% of the government's budget. The deficits are designed to lift domestic demand for Japanese products as the shrinking world economy has made a cut into its exports. In 1980, real growth is expected to slide from a current annual rate of 6.3% to 4.8% and inflation to rise from 4.5% to at least 6.4%. The unemployment this year will climb only fractionally to not more than 2% of the labour force. These trends are troublesome but not critical.

All put together, Japan continues to do much better than most of the rest of the world.

Rock Power

Recently, heat from hot, dry granite rocks about 3 km beneath the earth's surface in the Jemez Mountains of New Mexico (USA) was utilized to produce electricity. The 60 kW/hr electricity generated was experimental in scale and only a pointer to a potential source of geothermal energy. Till now, naturally occurring underground hot water or steam constituted the only source of geothermal energy.

For obtaining power from rocks two holes are point-drilled into the deep interior. Fresh water flowing down one hole is heated to above the boiling point by the hot rock and is returned to the surface in a closed-loop system. The hot water, kept under sufficient pressure to prevent it from vapourising, is run through heat exchangers to create the energy needed to rotate electricity-generating turbines. The process could be used by industry or for space heating.

Information on Tap

Telematique is a French invention which will introduce into offices and homes inexpensive terminals linked by telephone lines with central computers. The terminals can be used to find phone numbers, check the time of the local movie, transmit written messages and even report burglaries to the police.

INDUSTRY PROFILES

PAINTS AND VARNISHES

Paints and varnishes, besides their decorative use, are vital for imparting resistance to corrosion and fire, and to marine and other fungus growths; providing electrical insulation; protection against radiation; and reduction of frictional resistance, particularly in aeronautical applications.

Raw Materials

Among the major raw materials used in paints and varnishes are linseed oil, formaldehyde, copolymer emulsion, phthalic anhydride, pentaerythritol and titanium dioxide.

Though raw material availability has improved in recent years, about 60% of the raw materials is imported. Since the 1973 oil crisis, the prices of raw materials, which are derivatives of petrochemicals, have assumed alarming proportions. On an average raw material prices rose by about 40% during 1979.

Until recently titanium dioxide was not manufactured in India. Steps have now been taken to manufacture it domestically. However, the quality of rutile titanium dioxide needs further improvement to suit the requirements of the paints and varnishes industry. Modern, sophisticated paints and enamels are being increasingly based on synthetic resins instead of on conventional quick drying oils and natural gums/resins for reasons of resilience and durability.

Present Status

At present, there are 17 units in the organized sector manufacturing paints and varnishes with a total installed capacity of 1,25,100 tonnes/yr. There are about 900 units in the small scale sector which contribute substantially to the total output of paints and varnishes.

The aggregate output of the paints and varnishes industry has risen from 67,000 tonnes in 1971 to 81,000 tonnes in 1979. The production of paints and varnishes during the years 1976-79 are given in Table 1.

Capacity Utilization and Demand

The paints and varnishes industry has had an impressive growth in the utilization of its capacity. Capacity utilization (given in Table 1) rose from 60.3% in 1976 to 74.3% in 1979. This improvement in capacity utilization took place against the background of a fall in installed capacity between 1976 and 1979.

The paints and varnishes industry has had a high demand all along. The one constraint has been the high cost of production. Engineering, transport and structural industries have kept up the demand for paints and varnishes. The household sector's overall demand for surface coatings for protection and preservation has been rather poor.

TABLE 1—PRODUCTION AND CAPACITY UTILIZATION OF PAINTS AND VARNISHES

	Installed capacity (lakh tonnes)	Production (lakh tonnes)	Capacity utilization(%)
1976	1.21	0.73	60.3
1977	1.09	0.74	67.9
1978	1.09	0.77	70.6
1979*	1.09	0.81	74.3

*Estimated

Growth of the Industry

The paints and varnishes industry has good prospects of growth. The industry is already engaged in preparing its "long-term perspective plan" covering target rates of growth, requirements of modernization and diversification, development of indigenous raw materials, import of technology, etc.

With 50% of the output coming from the small scale sector, the future growth of the industry will depend largely upon the growth of the small units also.

Export and Import

A wide range of finished paints, enamels, lacquers, varnishes and colouring materials are exported to a large number of countries in Asia, Africa and the Far East.

Export of paints and varnishes increased almost four-fold to Rs 1,260 lakhs in 1977-78 from Rs 329 lakhs in 1971-72. During April-July 1979, the exports of paints and varnishes rose to Rs 500 lakhs from Rs 472 lakhs in the corresponding period of 1978.

Imports have been banned since 1975-76 [*Guidelines for Industries*, 1978-79, 112; *Industrial Chemical Handbook*, published by SBP Board of Consultants and Engineers, New Delhi, 557; E.T., 27.3.80].

TOOTHPASTE INDUSTRY

Toothpaste was introduced in India by the British. A few British companies like Colgate-Palmolive and Lever Brothers were the original manufacturers of toothpaste in India.

Raw Materials

There are numerous brands of synthetic, ayurvedic and medicated toothpastes. All brands of toothpaste differ in content, quality and taste. Basically, synthetic toothpastes contain the following ingredients: abrasives like salt, calcium carbonate, di- or tri-calcium phosphate and magnesium carbonate;

TABLE 1—PRODUCTION OF TOOTHPASTE IN THE ORGANIZED SECTOR

	No. of units	Installed capacity (tonnes)	Production (tonnes)	Capacity utilisation (%)
1973	8	4,051	7,349	181.4
1974	9	4,258	7,150	167.9
1975	11	4,297	4,153	96.6
1976	11	4,177	6,917	165.6
1977	11	4,193	9,097	217.0
1978	11	4,193	9,925	236.6
1979	—	—	10,000*	—

*Estimated

cleaning agents such as soap; wetting and foaming agents like sodium lauryl sulphate; and sweetners, flavours, colours, gums, preservatives, antiseptics and fluoride. Various brands of toothpaste contain a differing percentage of these components.

Present Position

At present, there are 11 units in the organised sector manufacturing more than a dozen popular brands of toothpaste. In addition to the organised sector, a good number of units function in the small scale sector. There were 10 units operating in this sector in 1972, which accounted for 1.2% of the total value of production. There was no significant improvement till 1974 when this item was reserved for the small scale sector. Since then a few more units have come up. At present, this sector account for about 8% of the total national production. Ayurvedic and medicated toothpastes are mainly manufactured by the small scale sector.

Production—Of the estimated total production of toileteries worth about Rs 80 crores in the organized sector the share of toothpaste is about Rs 35 crores or about 45%.

Figures for production and capacity utilization of toothpaste in the organized sector are presented in Table 1. It can be seen that during the last 7 years only 3 new units have come up and the installed capacity has been more or less stagnant. On the other hand, production came down from 7,349 tonnes in 1973 to 4,153 tonnes in 1975. Since then it has increased steadily to reach about 10,000 tonnes last year. The capacity utilization of more than 200% is quite striking.

Demand—Considering that only 5-10% of the Indian population uses toothpaste, it is a class market that toothpaste enjoys. Therefore, the future demand of toothpaste depends upon the increase in number of persons belonging to this minority. But with rising incomes and, particularly, changing lifestyles, it appears that a growing market awaits the toothpaste industry. Assuming that both domestic and export demand grows by at least 10 per cent, the total demand

for toothpaste by 1982-83 will be of the order of 15,892 tonnes. The industry is already working at more than 200% utilisation. Therefore, an additional capacity of at least 6,000 tonnes is required to meet the increased demand.

Future Scope

The existing units manufacturing popular brands of toothpaste have already reached maximum production and, therefore, the supply of the established brands will no longer increase in future. Additional demand will have to be met through an increase in the capacity utilization of existing small scale units and the creation of new units. The new units will have to bring out quality toothpaste and there should be a good market amongst the additional urban population, and in the semi-urban and rural areas.

Exports

The exports of toothpaste are very small, amounting to less than 1% of the total production. Hungary, Yugoslavia, Nepal, some countries in the Middle East and even the USA have been importing toothpaste from India. With increasing education, rise in incomes and increasing urbanisation, Indian toothpastes are expected to find good markets in most of the developing countries [*Industr. Researcher*, 1979, 6(2), 77-80; *Industr. Times*, 1980, 22(1), 4-5].

INDUSTRIAL NEWS

GENERAL

Industrial Production

All major industries (sugar, cement, power generation, crude petroleum and petroleum products, steel and aluminium) recorded heavy shortfalls in their production targets for 1979-80.

While the basic industries fared badly, the processing industries, particularly consumer goods, chemicals and chemical products, jute manufactures and tinned foods, did very well. The production growth rate, which had been alarmingly negative during the first six months or so, gradually reversed and is estimated to have stabilized at the zero level by the end of the financial year.

The main factors contributing to the overall shortfall in industrial production during the year were power and coal shortage combined with poor railway wagon movement.

In the automotive industry, while commercial vehicles, cars, and scooters made negative progress, jeeps, motor cycles, mopeds and scooterettes did very well. Agricultural tractors registered about 15% growth rate during the year.

Remarkable progress had also been achieved by jute manufactures, which registered a 27.6% increase in production compared to 1978-79. The areas which were on the positive side include beer, cigarettes, leather cloth, linoleum, biscuits and baby-food, leather footwear, polyethylene, synthetic rubber, nylon tyre cord, polyester filament yarn, sulphur drugs, synthetic detergents and tooth-powder, razor blades, grinding wheels, printing machinery, air and gas compressors, refrigerators and airconditioners, and household electrical equipment.

PLAN TARGETS FOR SELECTED INDUSTRIES AND THEIR OUTPUT ACHIEVEMENTS*

	Production 1978-79		Plan Target for 1979-80		Output Achievement 1979-80	
		mil. tonnes				mil. tonnes
Coal	105.3		112		106.3	
Crude petroleum	11.6	"	13.15	"	11.7	"
Pig iron	9.4	"	10.5	"	8.6	"
Steel ingots	8.1	"	8.56	"	8.02	"
Saleable steel	6.5	"	7.4	"	6.03	"
Aluminium	0.21	"	0.24	"	0.19	"
Blister copper	0.0218	"	0.03	"	0.0224	"
Zinc	0.064	"	0.073	"	0.053	"
Lead	0.01	"	0.015	"	0.011	"
sugar	6.5	"	6.2	"	4.8	"
Vanaspati	0.67	"	0.70	"	0.62	"
Jute manufactures	0.10	"	0.12	"	0.13	"

(Contd.)

Nitrogen fertilizer	2.1	"	2.6	"	2.2	"
Phosphate fertilizer	0.77	"	0.85	"	0.75	"
Newsprint	0.048	"	0.06	"	0.047	"
Petroleum products	24.15	"	27.0	"	25.54	"
Cement	19.3	"	22.0	"	17.54	"
Cotton yarn	1,268 mil. kg		1,300 mil. kg		1,181 mil. kg	
Cotton cloth	4,314.2 mil. metre		4,300 mil. metre		4065.8 mil. metre	
Power generation	103,328 mil. kWh		117,000 mil. kWh		105,410 mil. kWh	
Commercial vehicles	57,645 nos		60,000 nos		57,451 nos	
Cars	33,490 "		35,000 "		33,208 "	
Jeeps	12,287 "		12,500 "		14,139 "	
Agricultural tractors	54,268 "		57,000 "		62,361 "	
Rail wagons	11,614 "		13,000 "		12,090 "	

*F.E., 20.5.80

IDR Act Amendment

According to a recent amendment to the exemption notification of February 1973, the government has decided that for the purposes of industrial licensing under the IDR Act small scale units or ancillary units which are exempt from certain provisions of the IDR Act should not be subsidiaries of or owned or controlled by any other undertaking [*Econ. Trends*, 1980, 9(6), 23].

Weight and Measures Rule Amended

The government has amended the Standards of Weights and Measures (Packaged Commodities) Rules, 1977, with a view to ensuring the availability of quality consumer goods in standard quantities. The rules have gone into effect from April 1, 1980.

New provisions include, among others, packaging in rationalized standard quantities, size of the principal display panel and of the letters used in the mandatory marking, prohibition of deceptive packaging, and prohibition of the use of exaggerated and misleading nomenclature for package size such as Jumbo, Giant, King, Family, etc [*Econ. Trends*, 1980, 9(6), 23].

More Industries under IDR Act

The Union Government has, by an amendment, included six more industries, viz. cutlery, steel furniture, graphite crucibles, zip fasteners (metallic and non-metallic), oil stoves and printing (including litho printing) in Schedule 1 of the Industries (Development and Regulation) Act [*Econ. Trends*, 1980, 9(5), 24].

ENGINEERING INDUSTRY

Engineering Goods Exports

Export of engineering goods after showing a marginal improvement in Nov. (2%) and Dec. 1979 (4%) has declined by 15% in Jan. 1980.

The latest overall figures available for the first ten months of 1979-80 also show a shortfall of 19%. Against Rs 520.50 crores in April-January 1978-79, exports during the corresponding period of 1979-80 stood at Rs 423 crores. In January this year exports stood at Rs 51.95 crores against Rs 61.48 crores in the previous year.

Barring April, November and December, in the entire period under consideration exports of engineering goods have shown progressive downtrend. While April showed a 2% increase over the same period in 1978-79, exports in May, June, July, August, September, October and January continued to go down - the shortfall ranging from 3 to 43%.

The major items which accounted for the shortfall during April-January 1979-80 include industrial plants and machinery, electrical power machinery and switchgear, steel structures, wires and cables, complete vehicles, primary steel and pig iron-based items, non-ferrous products and consumer durables (E.T., 8.5.80).

Mini Generator

The West Bengal Electronics Industry Development Corporation (WBEIDC) has designed a mini-generator at their R&D centre in the electronics complex, Taratolla, Calcutta.

The solid state mini-generators manufactured by Sinha Electro Products (a small firm of electronic entrepreneurs in Calcutta) with technical know-how from WBEIDC come in three ranges - 100, 200 and 500 W. The 100 W range unit is capable of operating a 100 W electric bulb, a fan or a fluorescent lamp for four hours continuously during loadshedding provided its battery is fully charged. Six hours continuous charging of the battery from the mains is required for the four hours operation. The unit uses a single lead acid standard battery of 12 V. Both the 250 W and 500 W units use two batteries, the latter using 24 V batteries.

The change over of the units from AC power to battery operation is automatic and there is a thyristor controlled automatic charging of the batteries when the unit is plugged to the mains supply.

The cost of the three generators (excluding the batteries) of 100 W, 200 W, and 500 W are Rs 1,150, Rs 2,100 and Rs 3,150 respectively (B.S., 26.4.80).

Carbon Analyser

The National Metallurgical Laboratory, Jamshedpur, has developed a semi-automatic carbon analyser for the analysis of carbon in steel, alloy steels, and cast iron.

In the conventional equipment, considerable labour is expended in manipulating the levelling bottle in order to move the solution in the carbon

burette. In the semi-automatic analyser, the gas pressure effected by the operation of a simple knob is used to perform this function. For rapid analysis in industrial laboratories this improvement leads to considerable labour saving. Several operational troubles associated with the float valve of the carbon burette are avoided in the design.

The analyser is calibrated in units of 0.005% carbon; it can be operated in conjunction with a tubular furnace using silicon carbide heating elements or a high frequency induction furnace of 1.5-2.0 kW capacity.

Temp-plate Recorder

Wahl Instruments, Inc., USA, has designed a temp-plate temperature recorder which records surface temperature accurately and economically from 100°F to 1100°F with an accuracy of $\pm 1\%$. When exposed to rated critical temperature, indicator windows turn from pastel to black for direct readout, permanent and irreversible. Rated temperature is printed below each sensor window.

Model 240 ($\frac{3}{4}'' \times 1\frac{3}{4}''$) is a general purpose device for preventive maintenance and energy conservation programmes.

For further details contact: Jost's Engineering Company Ltd, Great Social Building, Sir Phirozeshah Mehta Road, Bombay 400001 (E.T., 28.4.80).

Electronic Dust Precipitator

The National Physical Laboratory, New Delhi, has developed an electronic dust precipitator using corona discharge. The know-how is available for commercial exploitation.

For further information write to: National Research Development Corporation of India, 61 Ring Road, New Delhi 110024.

CHEMICAL INDUSTRY

Export of Plastics and Linoleum

According to the 24th annual report of the Plastics and Linoleums Export Promotion Council for the year 1978-79, the value of exports of plastics and linoleum from India was more than double over the last five years. The exports rose to Rs 301.9 million in 1978-79 as against Rs 154.8 million in 1974-75, registering an increase of 103%. The highest annual growth rate recorded was 44% which was achieved in 1976-77. The annual growth rate figures for 1974-75, 1975-76, 1977-78 and 1978-79 were 25%, 20%, 5% and 9% respectively. The exports of plastics and linoleums during the last five years are given in the Table. These are exported mainly to the countries Abu Dhabi, Bangladesh, Dubai, Hungary, Iraq, Kuwait, Muscat, Nigeria, Saudi Arabia, UK, USSR and Yugoslavia [*Econ. commerc. News*, 1980, 10(19), 5; 1980, 10(20), 4].

EXPORTS OF PLASTICS AND LINOLEUMS

(Val. in Rs million)

	1974-75	1975-76	1976-77	1977-78	1978-79
Plastic moulded and extruded goods	26.71	35.87	60.01	67.70	67.72
PVC pipes and specials	18.60	14.54	51.58	56.24	59.58
PVC gramophone records	10.56	14.43	19.70	26.82	27.64
Plastics electrical accessories	12.81	18.28	18.62	14.61	26.42
Fountain pens, ballpoint pens, sign pens, fibre tip pens, etc.	4.29	4.18	2.16	2.82	21.76
Spectacle frames	5.94	7.82	10.67	9.45	15.06
Laminates (phenolic melamine)	4.41	1.76	8.96	9.77	13.38
HDPE woven sacks	14.66	7.36	12.50	15.14	11.01
PVC sheeting	7.33	12.46	9.19	10.50	8.63
Polyethylene rigid and flexible pipes and conduits	0.58	1.75	8.11	5.68	8.52
Plastics bangles	5.72	8.84	7.25	10.51	8.35
Plastic imitation jewellery	20.76	21.45	15.12	5.95	5.89
Polylined jute	2.47	4.79	3.52	10.27	4.54
PVC leather cloth	4.06	3.06	3.69	4.16	2.46
Foam leather cloth	2.75	3.52	1.81	3.49	3.16
Handbags and other PVC fabricated goods	1.16	1.08	2.08	1.82	2.35
Glass fibre, reinforced polyesters and manufactures including helmets	0.12	0.72	1.62	2.72	1.67
Plastics brushes excluding moulded brushes	2.70	4.46	1.83	0.66	1.80
Polythene coated fabrics/paper	0.01	0.02	0.12	0.27	0.25
Nitrocellulose cloth	0.31	0.38	0.36	0.48	0.29

Nitriles in Perfumery

Recently, interest has been generated in the use of nitriles in perfumery mainly due to the successful commercial introduction of geranonitrile and cinnamonitrile as alternatives to commonly used aldehyde counterparts. Nitriles are analogous in odour to corresponding aldehydes and are much more stable. These qualities make nitriles suitable for use in perfumes for soaps, detergents, cleaners and personal care products [*Tech. Surv. (Predicasts, USA)*, 1980, **36**(9), 7].

Fuel Gas

Columbio University engineers have developed a new process, simplex coal and biomass gasification process, which yields a cheaper natural gas substitute. It combines coal with garbage and is a combination of hydrogen and carbon monoxide (synthesis gas). It has one-third the heat content of natural gas, but it

burns at the same high temperature as natural gas. It cannot be used in the home because of high carbon monoxide content.

The process would be able to produce fuel gas with a heat content of a million Btu for \$ 2.50 compared with \$ 4 and \$ 4.50 for imported oil and conventional coal gas respectively of the same heat content (F.E., 17.2.80).

Herbicide

The National Chemical Laboratory, Pune, has developed a cheap herbicide formulation for the control of parthenium and other weeds. In this a minimum dose of herbicide is released in controlled, constant rate for a desired period. The raw materials required for preparing the herbicide (2,4-dichlorophenoxy acetyl chloride) are: 2,4-dichlorophenoxy acetic acid (2,4-D), lime, sawdust, soapstone, urea, nitrogen, thionyl chloride and dimethyl formamide. All except dimethyl formamide are available indigenously.

Organo Tin Stabilizers for PVC

Gandhi Parekh Investment Corporation Ltd, Bombay, in collaboration with Nitto Kasei Co. Ltd, Japan has been licensed to manufacture organo tin stabilizers for PVC at Baroda. Stabilizers to be manufactured include dioctyl tin maleates; dioctyl tin mercaptides; dibutyl tin maleates; dibutyl tin mercaptides; dibutyl tin dilaurates; and dimethyl tin mercaptides.

These organo tin stabilizers find application for manufacture of rigid PVC sheets, PVC clear tubings, PVC pipes, etc [*Chem. Times*, 1979, 6(46), 16].

MISCELLANEOUS INDUSTRIES

Solar Control Glass

Madras Sheet Glass Works has developed and marketed solar control glass suitable for use in buildings in tropical climate. The glass is stronger than tinted, figured glass and cheaper than wood.

The glass gives adequate daylight illumination without glare and the colour of objects viewed through the glass remains unchanged. Being a one-way glass, it safely guards the privacy of the interior and offers a panoramic view of the outside.

Besides taking the load off airconditioned buildings, the solar control glass can do away with artificial lighting during day [*Industr. Times*, 1980, 12(8), 9].

Thin-walled Container

Maharajah Plastic Products, Bombay, has developed a low-cost, elegant, thin-walled plastic packaging of uniform grade. A wide range of standard formings like bowls, cups, lids, single packs, presentation packs, egg-trays, butter dishes, lunch trays, etc. are available. These thin-walled containers are most suitable for packing a wide variety of products of industries like dairy, confectionary, pharmaceutical and even engineering.

As compared to conventional materials, thin-walled containers are light in weight, yet sturdy enough to withstand handling and storage. They save on transportation costs because of their light weight.

For further details write to: Maharajah Plastic Products, 109, Esplanade Mansions, 144 M.G. Road, Bombay 400001 (F.E., 6.4.80).

Percolator

The Central Food Technological Research Institute, Mysore, has designed a percolator unit which effects decontamination of drinking water from pesticides and bacteria using wood charcoal.

The decontaminated water thus obtained after removal of pesticide could be rendered free of bacteria by treating with an antibacterial agent.

This unit could be scaled up suitably for use in restaurants and hospitals.

Processed Foods

The Processed Foods Export Promotion Council has revised its export target for 1980-81 from the earlier figures of Rs 148 crores to Rs 160 crores. However, it has also identified the constraints, which if not removed may lead to shortfall in exports.

The main problem faced by the fruit and vegetable products industry is the high cost of tin containers, accounting for roughly 30 to 35% of the total cost of a product.

The Council considers the current facility to import cans for meeting 10% of the industry's requirement as inadequate. Despite this limitation, some of the exporters' initiative to import cans from Taiwan in flattened form will give a "competitive edge to our products."

Another difficulty being faced by the industry is the suspension of supply of levy sugar by the government, following the sugar crisis. The commodity is used in preparing fruit juices, syrups, jams and the like. This handicap has forced one syrup manufacturer to cancel an export order worth Rs 35 to Rs 40 lakhs from Middle-East for supply of fruit flavour cordial (60% sugar content).

Meanwhile the dehydration industry is facing uncertainty due to lack of stable demand for dehydrated fruits and vegetables. The Council has suggested that Commerce Ministry should sponsor a delegation for exploring the market in developed countries. The Council intends to export processed fruits and vegetables worth Rs 20.50 crores.

Regarding meat and meat products, as against the export target of Rs 9 crore for April-June, 1980, the Council has estimated a shortfall of Rs 4 crores. The shortfall caused by ban on the export of fresh chilled meat may lead to erosion of Indian base in the established markets. The body has planned to export meats valued at Rs 36 crores during this fiscal year.

Anticipating abundant exports of fresh onions, the Council hopes to exceed the target for fresh fruits and vegetables set at Rs 28 crores (F.E., 15.6.80).

TRADE ENQUIRIES

*Genephar Inc., P.O. Box No. 95, Cartierville, Montreal, Canada. The firm desires to have representation of India's pharmaceuticals, chemicals, cosmetics, medical and laboratory equipment manufacturers.

*Avedis Teperdjian, 224-Chandler Road, Andover, Mass 0180, USA. The firm desires to import miscellaneous art products which are made of wood, porcelain, glass, clay, stone, bronze, copper, marble, bamboo, painted or printed pictures etc. in the form of pottery, sculptures, statue dolls, clocks, screens, vases, candles holders, lamp shades, all kinds and shapes of ornaments.

*Handy Marketing Co., 341-28th Street S.E., Grand Rapids, MI. 49508, USA. The firm desires to have representation of Indian manufacturers, exporters and importers.

*Brownjohn & Howard (Exports) Ltd, 5-The Dirve, Hove, East Sussex BN3 3JE, England. The firm desires to import domestic and consumer products, men, women and children clothing and footwear, hardware, motor spares, accessories and tyres, textiles, raw materials for light industries of light industrial machinery.

*Transmetax, 20, ODOS Agiou Dimitriou, P.O. Box No. 434, Athens-114, Greece. The firm desires to import crude naphthalene, creosote oil, coal tar, pitch.

*Elektro Teknik, Buyukdere Cad., Yeniyol Sokak No. 1 Kat 3, Mecidiyekoy, Istanbul, Turkey. The firm desires to export technical magnesium oxide.

*Olanrewaju Liberty Trading Co., 60, L.E.D.B. Shop, Idumagbo Avenue, Lagos, Nigeria. The firm desires to import watch bands, electrical goods, sunglasses, wrist watches, caps, hats, brassiers, etc.

*S.A. Olawale Ora Trading Stores, 487-L.E.D.B. Shop, Tinubu Square, P.O. Box No. 3975, Lagos, Nigeria. The firm desires to import sunglasses, spectacle frames, sunglass-lens, folding sunglasses.

*Oladipo Leone Comm. Enterprises (Nig.), P.O. Box No. 1051, Agodi Post Office, Ibadan, Nigeria. The firm desires to import louvre frames, linoleum of all types in rolls, plastic pipes, ceramic products, serving plates, etc.

*Puzant Arslanian, P.O. Box No. 945, Aleppo, Syria. The firm desires to import auto-spares such as cylinder liners, flowing rings, pistons and rings, crankshafts, valve kits, clutch and clutch plate, assembly, and gear box.

*Nakhaleh Trading Co., P.O. Box No. 23517 Amman, Jordan. The firm desires to import carpets, curtains, bed spreads, floor covering, different kinds of wall papers and all interior furnishing items, pillows, quilts and blankets.

*Akkad Commercial Est., Al-Biary Street, Al-Otaibia, P.O. Box No. 1647, Mecca, Saudi Arabia. The firm desires to import all foodstuffs, spices, coffee, vegetables, fresh fruits, embroidered sarees, tobacco, sandal wood, all types of pulses, bed-sheets, pillows, blankets, crushed coconut powder and perfumes.

*Al-Hudaithi Establishment, P.O. Box No. 1254, Riyadh, Saudi Arabia. The firm desires to import tiles, marble, concrete hollow blocks, aluminium windows and doors, carpentry, plumbing fixtures, electrical fixtures and

equipment, different kinds of wood, building materials, glass of all kinds, food articles, etc.

*Al-Khomri Trading & Contracting Corp., P.O. Box No. 7417, Jeddah, Saudi Arabia. The firm desires to contact tea producers for importing first quality of Indian tea.

*Al-Taqi Trading Agencies, P.O. Box No. 4063, Hodeidah, Yemen Arab Republic. The firm desires to import steel trunks, hand tools, safety razor blades, etc.

*Al-Daboos Trading & General Cont. Est., P.O. Box No. 1382, Dubai, U.A.E. The firm desires to import high/low tension cables (power), meat, agricultural chemicals, fertilizers and foodstuff.

*Kavoosy Baroomand, 106-Mobl Sabet Bldg, Chahar-Rah Ordibehesht, Kheyaban Shah, Tehran, Iran. The firm desires to import garment leather (Nappa), softy & booty leather, upholstery leather (in buff calf), cow lining leather (in beige colour), cow sole leather 4.6 mm thick, all sorts of printed leather, etc.

*Persojcn Chemical Co. Ltd, P.O. Box No. 314-1714, Eisenhower, Eskandari Shomali No. 320, Forsat Square, Tehran, Iran. The firm desires to import medical and laboratory appliances, as also water proof wrapping paper.

*Riccar Trading Co. Ltd, Saraye Tchitsaz, Tehran, Iran. The firm desires to import pressure cookers and aluminium hand knitting needles.

*Geo-Im-Und Export GmbH, Talaghani Avenue, Iranian State Bank Building, 8th Floor, No. 4, Tehran, Iran. The firm desires to import chemical products for textile industry, leather for upper and sole shoe, nylon and acrylic yarn.

*South East Asia Agencies (Ceylon) Ltd, 181/2A, First Floor, State Bank Building, Prince Street, Colombo-1, Sri Lanka. The firm desires to import flattened tinplate cans, bleached kraft pulp, woven polypropelene bags, canvas balata belting, glass-sheet, aluminium blind rivets, nylon cord, hydrated lime, chemical gypsum or marine crystal rock gypsum, explosives & accessories, aluminium sheets, railway sleepers, vitamins for provender feed, cement clinkers, bead wire and raw materials for tyre manufacture, rosin, formic acid, paraffin wax, bleaching powder, carbon black, zinc oxide, refractory bricks and accessories, explosives and cartridges, dyes and chemicals for textile industry, sack kraft, paper, electric transmission line materials cables, earth conductors, stay assemblies, air break switches, insulators, lightening arrestors, drop down fuse switches, glue and hardener for plywood and chipboard manufacture.

*Sarwar Jute Mills Ltd, P.O. Box No. 57, Narayanganj, Bagladesh. The firm desires to import power generator 150 K.V. capacity set.

*Hamedia Jute Mills, 16-Motijheel Commercial Area, Namazi Chamber, 3rd Floor, Dacca-2, Bangladesh. The firm desires to import new/second hand jute mill machinery.

*T.C. Wong & Co. 68, Wellington Street, 7th Floor, Central District, G.P.O. Box No. 4353, Hong Kong. The firm desires to import natural mica.

ANNOUNCEMENTS

AWARDS

Industrial Design Awards

Three switchgear products of an Indian company, Larsen and Toubro Limited, have won the 'Good Industrial Design' awards in the competition at Hanover Fair held recently in West Germany. The award-winning products are the MMOO control contactor and two push-button pendants.

Export Awards

The Engineering Export Promotion Council, the Gem and Jewellery Export Promotion Council and the Syndicate Bank are among the 12 winners of trophies for outstanding export performance during 1977-78.

Jawaharlal Nehru Award

Five agricultural scientists from different disciplines have been selected by the Indian Council of Agricultural Research (ICAR) for the Jawaharlal Nehru Award for outstanding postgraduate research work in 1979-80.

These scientists will be given a cash award of Rs 5,000 each and a citation.

CONFERENCE

Rubber Conference

The eleventh rubber conference under the auspices of the Indian Rubber Manufacturers' Research Association will be held in Bombay in February 1981.

For further details write to: The Director, Indian Rubber Manufacturers' Research Association, Plot B/88, Road 'U', Wagle Industrial Estate, Thane 400604, Maharashtra.

FAIRS

International Carpet Fair

The Industrial & Trade Fairs Ltd will be holding an International Carpet Fair at Exhibition Centre, Harrogate, North Yorkshire from 2 to 5 September, 1980.

The range of exhibits is carpets and carpet tiles, underlays, floor coverings, fittings and ancillary equipment.

For further details write to: Industrial & Trade Fairs Ltd, Radcliffe House, Blenheim Court, Solihull, West Midlands B91 2BG.

Damascus International Fair

The Trade Fair Authority of India will be holding an International Fair at

Damascus in Syria from 20 August to 8 September 1980. The fair carries ample opportunities for promoting commercial contacts between India and the Arab world.

The products on display at the Indian Pavilion will include all types of machinery, electrical and electronic goods, tyres and tubes, pharmaceutical and medical preparations, paints and varnishes, ceramics and refractories, timber and plywood, scientific and laboratory instruments, army software, consumer goods and durables, foods and beverages, readymade garments and fashion-ware and handicrafts.

EXCISE, CUSTOMS INFORMATION CELL,

The government has set up a Directorate of Publications (Customs and Central Excise) to disseminate information on matters concerning Customs and Central Excise rules. To enable manufacturers of exciseable products, importers and exporters to know the latest in Central excise and customs laws, procedures, rates of duty, etc., the Directorate would take up a scheme under which copies of customs and Central excise notifications issued by the government would be mailed to registered subscribers within 48 hours of issue against payment of prescribed subscriptions.

MARKETING CENTRES

The Haryana Government has decided to open a marketing centre in each district of the state for marketing rural industries products on priority basis.

PUBLICATIONS

International Marketing Management: An Indian Perspective, by R.L. Varshney and B. Bhattacharya; Sultan Chand & Sons, 4792/23 Daryaganj, New Delhi 110012. pp. vi + 308. Price Rs 25.

During the last 2 or 3 decades India's role in international trade has undergone a remarkable change. From a country which mainly exported commodities, India has emerged as an exporter of manufactures too. Consequently, the management of international marketing has assumed considerable importance.

The book under review, in its 20 chapters, deals with all the facets of international marketing. In doing so it has, as suggested in the title, always kept the Indian perspective in view. Starting from the definition and framework of international marketing, the book gradually enters into thick of the subject and leaves no nook unexplored.

In addition to the text there are 4 appendices which provide interesting data, bibliography, a list of information sources and a review of questions on the subject set for M. Com. and M.B.A. examinations of different universities.

The book satisfies the dire need of a basic book on international marketing with special reference to India. It would prove a boon not only to graduate and undergraduate student but also to professional managers.

Market Survey Report on Export Opportunities of Public Address Equipment in Thailand, Malaysia, Singapore and Hong Kong by the Indian Institute of Foreign Trade, Ashok Bhawan, 93-Nehru Place, New Delhi 110019.

The Report has been prepared on the basis of one month overseas market orientation tour organized by IIFT in collaboration with International Trade Centre, UNCTAD/GATT Geneva. It contains useful and practical information on the market demand, products, specifications, distribution channels, buying considerations, strength of competition and opportunities available for exporting Indian public address equipment to these countries [*Econ. Trends*, 1980, 9(2), 29].

Economics of Small-scale Industries by S.P. Mathur; Sandeep Prakashan, B-149, Ashok Vihar, Phase-1, Delhi 110052. pp 277. Price Rs 80.

Although the present study is confined to small scale units in Agra district, UP, the issues raised by Dr Mathur have wider significance. In fact, the problems discussed by him merit serious attention as several small units in other parts of the country are encountering the same difficulties.

For example, acquisition of land, its registration with the local authority, engaging an architect or an engineer for the design, construction of factory building, its registration, securing power connection, etc., are among the problems faced by an entrepreneur before the unit commences production.

As these varied problems cannot be easily solved by an entrepreneur, the author has suggested that "it would be desirable to encourage promotional agencies to carry out these jobs on reasonable payments. Such agencies could provide a valuable promotional service to small industrialists."

A regional testing and research laboratory should be set up at Agra, the author suggests, to assist in the improvement of the quality of products. Several other suggestions have been made by the author with a view to imparting a measure of strength to small units in the Agra region. These merit attention of the authorities concerned (F.E., 16.12.79).

✓ *Edible Oils* by Madan Gopal Jajoo, S.S. Vaze and S.M. Muzumdar; Bombay Research Centre, 433, Arun Chambers, Tardeo Road, Bombay 400034. pp. 56. Price Rs 8.

This brochure has given a comprehensive survey of edible oils and analyzed the Government's policy on imports.

The study has duly highlighted the need, among other things, to raise per-hectare yields, pay more attention to new sources of edible oils and new processes of extraction of vegetable oils, prevent diversion of edible oils to industrial uses and consider the feasibility of importing oilseeds (F.E., 6.4.80).

INDUSTRIAL NEWS DIGEST

Volume 3 Number 8 August 1980

CONTENTS

Editor: S.K. Nag

Asst. Editor: V.K. Sharma

Ed. Asst.: Madhu Bala

Published by the Publications &
Information Directorate, CSIR

Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

Miscellany 1-2

Industry Profiles

Leather & Footwear Machinery Industry 3-4

Umbrella Industry 5-6

Industrial News

Guidelines revised, Steel scrap, Cement output, More items for small scale, Excise and custom laws 7-8

EEC collaboration, Ultrathin batteries, Solid state typewriter, Air filter, Tractor 9-10

Polystyrene resins duty cut, Dimethyl aniline, Butenediol, Insecticide, Vasicine, Interferon, Metol, Pure silicon, Metals from flyash 10-12

Newsprint from bagasse, Oleoresin, Natural colours for food, Vortex cleaner 12-13

Trade Enquiries 14-15

Announcements

Awards; Congress & Assembly; Fairs; Training; DGTD Regional Centres; Publications 16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate
(CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

On Brain Drain

The subject of brain drain has been much talked and written about during the last 2 or 3 decades. So much so that the term has almost become a cliché. Yet, the World Watch Institute, Washington, thought it fit to undertake a detailed study of international migration, a major portion of which deals with brain drain.

The study describes those who migrate to other countries in search of better living conditions as “economic refugees”. There are 20 million of such refugees and every year they remit foreign exchange homeward to the tune of at least \$ 8 billions. *Prima facie*, it seems that the sender country is benefiting from the easy earning of foreign exchange, but actually the manifestations of the phenomenon are different. The World Watch Institute after weighing the benefits accruing to the sending and the receiving nations has come to the conclusion that such emigration constitutes a sort of “reverse foreign aid” which benefits the receiving nation more than the sending nation. The explanation is that the flight of skilled talent is tantamount to the sender spending its time and money on the would be economic refugees not for the development of its own economy, but for the sake of another, better economy which can afford much more than the money the refugees are sending home to train their own personnel in the skills the refugees are carrying to the receiving nation.

The World Watch Institute study observes that the emigrants do not usually return home and, if they do, they do not engage themselves in the same occupation as that in which they were placed abroad and that the skills acquired by them are not, in many cases, needed by their own country. Thus, the net loss incurred by the home country is far higher than the gains of homeward remittances. What the study fails to observe is that the loss suffered by the home country can be eliminated to a large extent if, instead of lamenting about brain drain and blaming the receiving country of robbing the talented people of a poor country, the sender country creates within itself conditions necessary for the skills acquired by the refugees abroad to be used directly and profitably at home.

Steel in the Eighties

Rise in oil price has lowered the demand and raised the cost of steel. The developed countries are stuck with an excess capacity of 16%. Understandably, they are wooing the newly industrialising countries (NICs) and the less developed countries (LDCs), whose annual demand is expected to grow at 10%, to import steel instead of producing it indigenously. However, the NICs and LDCs are unlikely to increase their steel imports which are already about 40% of their total consumption. China and some Latin American countries, notably oil-rich Venezuela, are trying hard to step up their steel production. India too expects to nearly double its steel-making capacity to 24 million tonnes by 1990.

In spite of their valiant efforts, the NICs and LDCs will remain net importers of steel at the end of the decade. It is on this that USA and the OECD steelmakers are pinning their hopes. But, if they want to make steel export to NICs and LDCs a highly lucrative proposition, they would have to set their own houses in order. That means they will have to bring down their cost of production to the level of Japan, which produces the cheapest steel among the developed countries. This is easier said than done. For modernization of the American and European steel industry *a la* Japan will entail huge expenditure. For example, USA alone will have to pour \$ 7 billion in the steel industry for its modernization. Thus, the travails of the world steel industry in the eighties are considerable.

Artificial Blood

Although the concept that oxygen-carrying properties of perfluorocarbons could be used as an artificial hemoglobin for humans was first proposed by American researchers in the mid-sixties, it was R. Naito of Green Cross Co., Osaka, Japan, who pioneered the development and commercialization of perfluorocarbon fluids for blood transfusion applications. Till now the artificial blood, Fluosol, has helped save the lives of 95 patients, 4 in USA and 91 in Japan.

The Economy of Solar Energy

In the wake of the great enthusiasm for solar energy all over the world comes a gloomy prediction from Federal Solar Energy Research Institute, Golden, Colo., USA. Research in the Institute of existing flat-plate collectors, evacuated tubes and other technologies indicates that industrial application of solar energy will be uneconomical. The average system-energy cost of solar energy, with current technology would be over 4 times the current cost of energy from crude.

INDUSTRY PROFILES

LEATHER AND FOOTWEAR MACHINERY INDUSTRY

The leather and footwear machinery industry in India is of recent origin. As a considerable part of the production in the leather goods industry comes from the cottage and small scale sectors where sophisticated machinery is not much utilized, the demand for leather and footwear machinery was not very encouraging in the past. But, recently, there is a shift towards the use of improved methods of production in the leather goods industry to supply high quality products to foreign countries, particularly with a view to increasing their exports in the near future. Hence, the demand for leather footwear machinery is rapidly picking up and there is good scope for investment in this line.

Raw Materials

The essential raw materials required for the manufacture of leather processing machinery are castings, special steel, knives, etc. Almost all of these items are available indigenously.

Present Status

At present there are 4 units in the organized sector for the manufacture of leather footwear machinery and machinery for leather tanning and finishing with a total licensed/registered capacity of Rs 227 lakhs/yr. Overall installed capacity is around Rs 200 lakhs.

Till recently, the production in the organized sector was primarily in the field of footwear machinery only. Very recently, one public sector unit has started production of leather tanning and finishing machinery. In addition, a few small scale units are also manufacturing footwear machinery items. Production figures of all categories of leather footwear and leather tanning and finishing machinery in the organized sector during 1974-78 are given in Table 1.

Future Scope

The future prospects for leather footwear and leather tanning and finishing machinery depend upon the growth of leather and leather goods industry. India is one of the foremost cattle-rearing nations and possesses the highest animal population in the world which shows that there is ample scope for the growth of leather and leather goods industry in this country. The demand for leather processing machinery is estimated to be of the order of Rs 857 lakhs by 1982-83.

There is also good scope for the export of leather machinery to the African, South-East Asian and Latin American countries because of the abundant availability of raw hides/skins in these countries. With increase in the industrial development activities, these countries are also expected to go in for export of finished leather goods which will obviously require plant and machinery.

TABLE 1—PRODUCTION OF LEATHER FOOTWEAR AND LEATHER TANNING AND FINISHING MACHINERY

(Val. in Rs lakhs)

1974	29.57
1975	23.59
1976	27.18
1977	39.97
1978	149.34

Therefore, if timely steps are taken and further capacity created in India, substantial foreign exchange can be earned besides effecting savings on the import of machinery.

Some of the items of leather footwear machinery in which scope exists are: strap cutting machine, strap folding machine, skiving machine, clicking machine, upper folding machine, insole converting machine, pulling over machine, pulling over and cement lasting machine, console lasting machine, staple side lasting machine, kamarian lasting machine, outsole stitching machine, heel seat lasting machine, automatic packaging and cycletting machine, hand vulcanising presses, foam rubber vulcanising presses, PVC shoe machines (four and six stations), and string lasting machine.

The Central Leather Research Institute, Madras, is in the process of developing some of the leather processing machinery. However, in view of the fact that most of the machinery is still being imported and is covered under the Open General Licence, technical collaboration with foreign firms can also be considered on merits.

Import and Export

Substantial imports of leather footwear and leather tanning and finishing machinery in the country are taking place, though some machinery is being exported also. West Germany, Italy, Czechoslovakia and Sweden together account for 67% of India's imports. Major buyers of Indian leather footwear machinery are Malaysia, Sri Lanka, Indonesia, Iraq, Kenya, Thailand and Ghana. Import and export figures for 1974/75 to 1977/78 are given in Table 2 [*Guidelines for Industries*, Pt II, 1978-79, 69; *Econ. commerc. News*, 1980, 10(14), 6].

TABLE 2—IMPORT & EXPORT OF LEATHER FOOTWEAR AND LEATHER TANNING AND FINISHING MACHINERY

(Val. in Rs lakhs)

	<i>Imports</i>	<i>Exports</i>
1974-75	37.32	4.36
1975-76	115.06	8.34
1976-77	265.40	6.10
1977-78	453.13	9.58

UMBRELLA INDUSTRY

The first factory to manufacture umbrellas was set up in the 19th century. It had to depend on imports for umbrella cloth and ribs. There were other stray attempts to manufacture umbrellas indigenously, but none of these was quite successful due to difficulty in getting necessary raw materials and machinery. After World War I, a few units were set up in the small scale sector around Calcutta which assembled umbrellas from imported components and sulphur-dyed cloth. Only after World War II, when the government banned the import of umbrellas, many small umbrella manufacturing units sprang up in all parts of country.

Raw Materials

The basic materials for making components of an umbrella are: wood, steel, plastics, cotton and nylon. Steel, in the form of rod and wire, is used for making tubes and ribs and various other small parts of an umbrella. High carbon steel is required for making umbrella stems and ribs. Plastics are mainly used for making umbrella handles and ferrules. Cotton and nylon are required for making umbrella-cloth.

Cotton cloth for umbrellas is being manufactured by a few units in the large scale sector, of which Century Spinning & Mfg Co. Ltd, Bombay, produces 80% of the entire indigenous requirement. This firm is the only one to manufacture aniline black cloth, which is supposed to be the best umbrella-cloth. Another variety known as sulphur black cloth is available in the market, but there are not many takers for this cloth as it is considered inferior to aniline black cloth. As a result, the price of aniline black cloth has gone up by 300% in the last 10 years.

There is only one unit manufacturing nylon umbrella-cloth.

Present Position

More than 500 small scale units are engaged in manufacturing umbrellas. These units are scattered throughout the country, but the concentration is mainly in big urban centres like Bombay, Calcutta, Delhi, Ahmedabad and Madras.

The entire umbrella assembly is done by hand and the industry provides only seasonal employment to about 10,000 persons. Most of the units buy the different components of an umbrella instead of making them in their premises. The industry is yet to get modernized and produce umbrellas of latest designs popular in the world. There has never been a serious attempt to manufacture automatic umbrella frames in the country, even when there is a craze for automatic umbrellas and an estimated 80,000 frames of automatic and folding umbrellas are being imported every year under replenishment (REP) licences. In fact, it is this inflow of sophisticated umbrellas at modest prices that is killing the initiative to set up modern umbrella manufacturing facilities in the country. The government has now banned imports of foreign umbrella frame under REP licence, but old stocks of these frames are still aplenty in the market.

Production—At present, India produces about 1 crore traditional type umbrellas/yr worth more than Rs 20 crores. There would be hardly 5 or 6 units with annual turnover of over Rs 1 crore. Most units have turnovers of Rs 10 lakhs/yr or less.

Export and Import

Only about 1% of the umbrellas manufactured in India are exported. Burma, Sri Lanka and some East African and Middle Eastern countries are the main buyers of Indian umbrellas. Among the West European countries, only France imports regular umbrella ribs from India.

As stated earlier, import of umbrellas has been banned by the government recently [*Wlth India - Industr. Products*, IX, 75; *Engng Times*, 7.9.78; *Industr. News Digest*, 1979, 2(1), 4; E.T., 3.6.79; 4.6.79; 1.7.80].

INDUSTRIAL NEWS

GENERAL

Guidelines Revised

The guidelines for the distribution of EC grade aluminium have been revised. Under the new system, each unit will be entitled to an allocation of the metal. The indigenously produced metal would be pooled with the imported one for this purpose.

These allocations would be made only for the first six months of the current fiscal year. Subsequent allocations would be made after taking into account the supplies made to units during the preceding months as also their performance.

Secondly, allocations made in favour of cable and conductor units would be based on their capacity (as on April 1, 1980) in terms of weight and their best offtake during the four years preceding 1979-80. Units established during the course of the year as also the revived ones would also get their allocation.

The allocation procedure would be extended to units other than those engaged in cable and conductor manufacture on the basis of the best offtake for imported and indigenous quantity in any year during the four years preceding the last fiscal year.

Provision for *ad hoc* allocation has also been made for units which do not have any offtake during the relevant period. This would be done on the recommendations of the authorities concerned subject to a ceiling of 10 tonnes. Additional allocation may be made on the recommendations of DGTD/DCSSI after review of their performance up to July 1980 (E.T., 26.4.80).

Steel Scrap as Small Industry

The government has decided to recognize the processing of steel scrap as a small scale industry eligible for facilities and assistance available under the small industries development programme. Units engaged in processing of steel scrap could, therefore, be registered as small scale units, subject to the prescribed ceiling on investment in plant and machinery [*Econ. Trends*, 1980, 9(8), 26].

Rise in Cement Output Likely

Cement production during 1980-81 is anticipated to go up by as much as 5 million tonnes over last year's 18 million tonnes. This is because of two factors. While the power situation is expected to improve considerably throughout the country with the onset of monsoon, an additional capacity of 3.5 million tonnes is to materialise during the year.

In spite of the expected leap in production, the shortfall in the availability will be about 5 million tonnes with the demand placed at nearly 28 million tonnes. The supply-demand gap during 1979-80 was even higher at 8 million tonnes.

Against an installed capacity of 24.29 million tonnes as on April 1 this year, the additional capacity that has been sanctioned through letters of intent and licences stands at 27.50 million tonnes.

Besides 63 schemes for setting up mini-cement plants, with a total capacity of 2.35 million tonnes, have been registered with the Directorate General of Technical Development.

According to present indications, additional capacities likely to come up during the years 1980-81, 1981-82 and 1982-83 are respectively estimated at 3.50, 3.12 and 5.31 million tonnes.

The years 1983-84 and 1984-85 are expected to see further addition of 4.55 and 5.94 million tonnes respectively (F.E., 4.6.80).

More Items for Small Scale Industry

Twentyseven more items have been added to the list of items reserved for the small sector, taking the total up to 834.

The new items reserved for small scale industries are: 1. Stearate of aluminium; 2. Stearate of magnesium; 3. Stearate of calcium; 4. Stearate of zinc; 5. Methyl salicylate (based on purchased salicylic acid); 6. Halogenated hydroxy-quinolines (starting from 8-hydroxy quinolines) except for integrated schemes for the manufacture of 8-hydroxy quinolines; 7. Simple glass mirrors excluding specialized glass mirror such as those meant for optical instruments, etc.; 8. Glass marbles (all types); 9. Lime (other than captive consumption); 10. Hydrated lime (other than captive consumption). 11. Stainless steel utensils; 12. Harvester, grader, baler and other earthmoving blades used in agricultural machines; 13. Cotton ginning knives; 14. Tea cutting knives; 15. Three-knived rimmer and envelope cutters; 16. Clicking knives for leather industry; 17. Chopping knives and lancets for match industry; 18. Plastic shredding and granulating knives; 19. Knives and shearing blades (all types including those for metal, paper, bamboo and wood for hand operated machine); . Stainless steel refiner/bar knives; 22. Electro formed screens/liners used in the chemical and sugar industries; 23. T.V. deflection components; 24. Pick-up cartridges; 25. Cast brass watch cases - polished and plated; 26. Bone meal (except captive consumption for 100% export); 27. Crushed bones (except captive consumption for 100% export) (F.E., 25.5.80).

Excise and Custom Laws Scheme

The Directorate of Publications set up by the Finance Ministry under Custom and Central Excise has launched a scheme under which copies of the Central Excise notification will be mailed to registered subscribers within 48 hours of the issuance.

To benefit from this facility, manufacturers of excisable goods, importers and exporters have to register themselves with the Directorate of Publications, Custom and Central Excise, Central Revenue Building, Indraprastha Estate, New Delhi 110002 [*Econ. Trends*, 1980, 9(6), 24].

ENGINEERING INDUSTRY

EEC Collaboration

According to the Association of Indian Engineering Industry, India and the European Economic Community (EEC) can now collaborate in a number of third country projects especially in the field relating to textiles, paper engineering, steel production, design construction, power distribution and urban housing development.

In addition to this, India and EEC can also develop long-term purchase arrangements. Under these arrangements, the community can use Indian Industry as a regular source of supply for components, sub-assemblies and machine tools.

At present, there are about 165 tie-up in the engineering sector which forms 62% of the total collaborations with the community (E.T., 7.5.80).

Ultrathin Batteries

Matsushita Electric Industrial Co. Ltd has designed sheet-like ultrathin batteries for wrist watches, camera, calculators and other electronic products with low power consumption (20 to 50 μ A). Measuring just 0.8 mm thick, the new batteries are easily manufactured in a multitude of shapes including triangles, rectangles, semicircles and doughnuts. Shelf life of the battery is approximately the same as any ordinary 9 V battery.

For further details contact: Dave Berend, Panasonic Co., One Panasonic Way, Secaucus, NJ 07094, USA [Design News, 1979, 35(15), 68].

Solid State Typewriter

Static Systems Corpn has designed a solid-state typewriter which has no moving parts that wear and produce noise. Chief components of the typewriter are a Hall-effect keyboard with memory and a CMOS driver that operates a remote, letter-size liquid crystal display. The unit does not require ribbons and produces multiple copies without carbon paper.

The keyboard display allows the text to be examined and corrected before a copy is printed. Correcting features, including scrolling, are similar to those in conventional word processors.

Print out is activated by a button on the keyboard that transfers the text to the remote LCD imager. Synchronized with the scanning rate of the copier, the imager produces single- or multiple-page printouts in seconds. Print quality is limited only by the copier.

Additional applications of the unit include solid-state photostating using self-developing Polaroid film, fascimile and photo engraving.

For further information write to: Robert Lester, Static Systems Corpn., 101 Park Ave., New York, NY 10017 [Design News, 1979, 35(16), 64].

Air Filter System

Advani-Oerlikon's new air filter system is a logical extension to high voltage rectifiers, already manufactured and marketed by the company. The air filter

system is compact, efficient, cost effective and easy to install. It is an effective answer to pollutants which cannot be filtered by mechanical methods and is based on the application of the principle of electrostatic field, now acknowledged as one of the most efficient methods to filter particles of around 1 micron.

The system has two zones. The ionizing zone charges the particles while the collecting zone settles the particles. The system incorporates controls and indication like ON/OFF knob to adjust the corona current to an optimum level and a current meter to indicate precipitator field current. The latter feature makes the system capable of handling different degrees of dust/pollutants equally efficiently.

This compact, self-supporting room unit is ideal for application in offices, surgical theatres, telephone exchanges, TV stations, semiconductor devices factories - in fact wherever an uncontaminated atmosphere is essential.

For further details, write to: *Advani-Oerlikon Ltd, P.B. No. 1546, Bombay 400 023.*

Tractor

A British firm has designed a compact two-wheeled pedestrian-controlled/ride-on tractor with a variety of implements for cultivation of a wide range of agricultural and horticultural crops on smallholdings - from corn and groundnuts to vegetables, fruits and flowers. The tractor's compact dimensions (1.2 m long \times 690 mm wide \times 995 mm high) and light weight (185 kg) make it suitable for use both on flat and hilly ground, including vine and other crop cultivation on difficult terraced terrain.

For further information write to: *Ashfield Agricultural Products Ltd, Haydock Park Road, Ascot Drive, Derby, UK. [Industr. Prod. Finder, 1980, 8(6), 33].*

CHEMICAL INDUSTRY

Duty on Polystyrene Resins Cut

Government have reduced the excise duty (w.e.f. February 28, 1980) on polystyrene resins from 40% to 27% *ad valorem*. Excise duties on five other naphtha based plastic resins namely, nylon moulding powder, acrylonitrile butadiene styrene, phenol formaldehyde moulding powder, urea formaldehyde moulding powder and polyester resins, have been reduced to 36%, 29%, 30%, 33% and 29% respectively.

On the other hand, it has been decided to increase the excise duty on non-naphtha based polyvinyl chloride resin from 40% to 45% *ad valorem*. Improved PVC would be liable to countervailing duty at the rate of 45%. Countervailing duty on imported products remains unchanged [*Econ. Trends*, 1980, 9(6), 25].

Dimethyl Aniline

The National Chemical Laboratory, Pune, has developed a vapour phase catalytic process for the production of dimethyl aniline (DMA). The activity of catalyst is maintained at the steady value by continuous introduction of catalyst and activating agent.

An Industrial concern of Pune has established commercial production of DMA in M.P. from Nov. 1978. The firm has produced 756.35 tonnes of DMA valued at Rs 180.46 lakhs.

Butenediol

In collaboration with Hindustan Organic Chemicals Ltd (HOC), National Chemical Laboratory, Pune, has perfected technology for the production of butenediol, an insecticide. A plant of HOC has commenced trial production. The demand for the chemical is estimated at 2,000 tonnes/yr valued at Rs 6 crores.

Insecticide

The National Chemical Laboratory, Pune, has synthesized an insecticide from carene, a cheap product of Indian turpentine oil. The chemical possesses properties such as high insecticidal activity, low mammalian toxicity, and rapid biodegradability.

Vasicine

Scientists of National Chemical Laboratory, Pune, have developed a new drug, vasicine, derived from *Adhatoda vasica* (Vasaka) used as medicine in Ayurvedic system. It contains oxytocin, ergot and prostaglandin like activities to assist child birth.

Interferon

According to recent findings, interferon, a glycoprotein, has very good cancer therapy value. Two American drug firms, G.D. Searle & Co. and Abbott Laboratories, are undertaking the mass production and clinical testing of interferon. It will be used experimentally on 30 cancer patients. Both manufacturing firms are developing techniques to isolate the substance in large volumes from human connective tissues [*Tech. Surv. (Predictcasts, USA)*, 1980, 36(16), 3].

Metol

The Central Drug Research Institute, Lucknow, has developed a process for making metol (*p*-N-methyl aminophenol sulphate). In the process, *p*-aminophenol is reacted with monochloro acetic acid to give *p*-methyl aminophenyl glycine which is decarboxylated to *p*-methyl aminophenol and this is converted to metol. Metol is used as a photographic developer and in dying furs.

The main raw materials are: *p*-aminophenol, monochloro acetic acid, cyclohexanone and isopropanol. All these are available indigenously.

The main items of machinery required are: reactor (steam jacketed, glass lined), centrifuge, fractional distillation unit, industrial vacuum pump, hot air drier and crystallizer.

The cost of production is estimated at Rs 150/kg.

Pure Silicon at 1/10th Cost

Scientists at SRI International, Menlo Park, Calif, have developed a one step process to produce high-purity silicon (at 1/10th of the cost of present methods), pure enough for use in solar cells.

This process can produce solar-cell-quality silicon at a cost of \$ 5/kg as compared to the current price of about \$ 60/kg and a Department of Energy goal of \$ 10/kg for solar-cell silicon by 1986.

The raw materials required for the process are sodium fluorosilicate and sodium. Sodium fluorosilicate is derived from a cheap, readily available waste product of the phosphate fertilizer industry. The only byproduct of the reaction, sodium fluoride, can be sold to aluminium producers for making cryolite [*Chem. Engng News*, 1979, 57(36), 8].

Metals from Flyash

The Oak Ridge National Laboratory (ORNL) has developed a process to recover aluminium and other valuable metals such as titanium and iron from the flyash resulting from coal combustion. The process (known as Calsinter process) is also useful in checking hazardous pollutants in flyash and reducing the volume of the ash requiring disposal.

Flyash is available in plenty from thermal power plants in India. The ORNL process is under evolution for developing preliminary cost estimates for a commercial sized plant capable of processing a million tonnes/yr of flyash [*Chem. Times*, 1980, 7(14), 2].

MISCELLANEOUS INDUSTRIES

Newsprint from Bagasse

Tamil Nadu has taken the lead in sponsoring India's first newsprint and paper project based entirely on bagasse. The Rs 153-crore public sector venture, with a foreign exchange component of Rs 49 crores, will daily produce 300 tonnes of newsprint and 200 tonnes of printing and writing paper.

There are three newsprint mills in the world using only bagasse as feedstock. These are located in Peru, Mexico and Argentina. The Tamil Nadu plant, which will be the fourth, will use the same process that has been successfully adopted in those mills.

At present, NEPA Mill in Madhya Pradesh is the only manufacturer of newsprint in the country. The Hindustan Paper Corporation is setting up a big plant in Kerala. Mysore Paper is also believed to have made considerable progress in putting up a 75,000-tonne plant. To enable the mills to release bagasse to the newsprint and paper mill, the Tamil Nadu Newsprint and Paper Ltd has proposed to instal coal-fired boilers in the sugar factories at its own cost. Five such factories have been identified and tie-up arrangements are underway. The requirements of coal for the newsprint plant as well as the boilers to be installed in sugar factories are estimated at 3.4 lakh tonnes/yr.

The plant will require 25 million gallons of water/day. The location of the plant will be decided after ascertaining the availability of water and the suitability of site for the receipt of both sea-borne and rail-borne coal.

Seshasayee Paper and Boards Ltd is the technical consultant. The project is expected to be commissioned in about 36 months [*Chem. Times*, 1980, 7(23), 1].

High Pungency Oleoresin

Sonit Aromatic Chemicals Pvt. Ltd, Bangalore, has achieved a breakthrough in spice technology by developing a very high pungency oleoresin from Indian chillies. The company has already commercialized their process and has made the first shipment of two tonnes of high pungency oleoresin, capsicum, valued at Rs 8 lakh to USA.

The product has been acclaimed by the world's top chilli oleoresin manufacturers as superior. Other spice oleoresins offered by the company include black pepper, celery, ginger and turmeric (E.T., 7.4.80).

Natural Colours for Food

The list of permitted artificial colours used in food and drink formulations is fast shrinking because of a better understanding of the toxicological properties of these colours and concern for food safety. Foreseeing the contemplated ban on the use of synthetic colours in food preparations because of possible toxic hazards, the Central Food Technological Research Institute (CFTRI), Mysore, has developed technology for making natural colours in a dispersed dry powder form safflower petals, blue grapes, kokam (*Garcinia indica*) fruit and beetroot. These colours find use in a wide range of products like syrups, jams, jellies, sauces, soft drinks and dairy products. CFTRI's studies have been confined mainly to pigment-bearing extracts from edible materials of vegetable origin that are considered generally safe. The technical know-how for the production of natural food colours will soon be available for industry.

Vortex Cleaner

Span Associates, for the first time in India, has started manufacturing a Vortex cleaning system on commercial basis. The system separates the contaminants in a liquid and delivers only the clean liquid.

A Vortex cleaner works on the principle of centrifugal separation, consisting of a parallel tube type centrifugal separator. The basic advantage of the Vortex cleaning system lies in the fact that it can separate the particles above a specific size as per the users' requirement.

Therefore, the system finds its application in various fields like sugar, ceramics, pulp and paper, and machine tool industries.

At present, Span Associates is manufacturing Vortex cleaning systems for machine tools like cylindrical grinders, surface grinders and washing booths (F.E., 25.6.80).

TRADE ENQUIRIES

*Greene Business Service, 1651-Mayfair Road, Richfield, Wisconsin-53076, U.S.A. The firm desires to establish contacts with Indian firms for imports and exports.

*Chinetradco International B.V.(Holland), Rompert Centrum, P.O. Box No. 3072, 's-Hertogenbosch, Nooro Brabant, Holland. The firm desires to import handicraft good, fireworks and crackers, as also spices and seeds such as turmeric, dry ginger, corriander seeds, cummin seeds, cardamoms, black and green pepper, red chillies, dill seeds, fenugreek seeds, etc.

*Tomoki Ishikuro, Harpsundsvagen-103, S-124 40 Bandhagen, Sweden. The firm desires to import medical instruments such as low frequency therapy instrument for therapist and acumpuncturists.

*Montoliu, Rocafort-35, Sabadell, Spain. The firm desires to import handtools such as socket and spanner sets, open ended spanners, ring spanners, combination spanners, screw-drivers, grips, adjustable wrench, hammers, feeler guage, torque wrench, etc.

*Joseph Gerson, 20-Valaoritou Street, P.O. Box No. 653, Thessaloniki, Greece. The firm desires to contact manufacturers and exporters of spare parts and accessories for agricultural machines, as well as handtools, etc.

*Hovsep Kassabian, P.O. Box No. 3785, Aleppe, Syria. The firm desires to import pinion starters, small and large stops for cars, dynamo and thermometers, regulators and all other comprehensive electrical parts for cars.

*Friends Exhibition, P.O. Box No. 1057, Muttrah, Muscat, Sultanate of Oman. The firm desires to have plant and machinery with technical know-how and material for the manufacture of aluminium utensils.

*Sana's Trading Corporation, Daar Al-Gaamia, P.O. Box No. 1203, Sanna's, Y.A.R. The firm desires to import all kinds of foodstuffs, confectioneries, teas and other products.

*Abdul Rahman Al-Omran Trading Est., Al Higaz Road, P.O. Box No. 4709, Riyadh, Saudi Arabia. The firm desires to import sanitary ware and fittings, steel pipes, ceramic tiles and other building materials.

*Abuhayya Establishment for Trade, P.O. Box No. 5088, Jeddah, Saudi Arabia. The firm desires to import readymade garments, footwear, textiles, hosiery, novelty, house appliances, etc.

*Al Fairouzy Contracting & Trade Est., P.O. Box No. 1261, Mecca, Saudi Arabia. The firm desires to import household, official and general appliances, garments, toys, canned juices, electric and electronic products.

*Dalami Trading & Commission Office, Khan El-Pasha, El-Saghir, Second floor No. 212, Baghdad. Iraq. The firm desires to import twine, coir ropes, sisal ropes and sisal fibre.

*Mohammad Ali, Abedeyan, 81-Pasaj Mobasser, Koucheh Nazemu lateba, Ekbatan Avenue, Tehran, Iran. The firm desires to import gardening implements, flower seeds, chemical fertilizers, fluorescent tubes, auto spare parts, toiletries and

bath fittings, electrical appliances, corn oil and other cooking oil, gas boiler with/without hot water units, light agricultural equipment, building construction materials, pipes, toilet fittings, chimney for kerosene lantern, gas mantles for kerosene lantern, dairy products, butter cheese, household appliances, kitchenware, live lamb, chicken, foodstuffs, prophylactics (for birth control), as also machinery for setting up small scale industry.

*Admiram Manufacturing Co., 82-North Palestine, P.O. Box No. 41/1238, Tehran, Iran. The firm desires to import screws and nuts (steel made), copper wire, plastic raw materials (polyamide, polyethelene, polycarbonate, urea moulding powder, A.B.S., etc.), silver wire, cold rolled steel strips, brass strips, small springs, small electrical turned parts, silicon sprays, electrolytical nickel anodes, rubber bands, etc.

*Venus Knitting Industries, 20-Maniya Co-op Housing Society, Jamaldin Afgani Road, Karachi-5, Pakistan. The firm desires to import cotton, woollen and synthetic knitwears like T-shirts, sportswear, underwear, outwear, swimming costumes, children's rompers, panties, etc.

*Lion Universe, 11-Braybrooke Place, Colombo-2, Sri Lanka. The firm desires to import sugar, flour, malt, skimmed milk powder.

*World Trade Associates, Nahar Mansion, 3rd floor, 150-Moti jheel, P.O. Box No. 2187, Dacca-2, Bangladesh. The firm desires to import plant and machinery for the manufacturing of amber bottles, red oxide, citric acid, spices (grinded and dried) as also ice plant, etc.

*Bangladesh Northern Traders (P) Ltd, Mirpur, Dacca, Bangladesh. The firm desires to have technical assistance for joint ventures, civil and engineering assistance in the construction centres as also to import re-condition cars, trucks, chasis, bus chasis, complete trucks, bus, water tanker, oil tanker, second-hand sea trawlers, sports goods, auto parts, tetron, wooly cloth, best quality cigarettes, tobacco, cigars, tobacco pipe, cigarettes gas lighter, cigarettes light gas cylinders, embroiding thread single and twine, sewing machine and threads, X-ray film (fresh), surgical instruments, fresh motor battery both 6 volts and 12 volts, tyres of all sizes, photostat and duplicating machine, electrical fan freezer, refrigerator, air cooler, air condition and heavy central air-condition plants, fountain pen, ball pen, pencils, pencil cutters, nailcutter, luxury items such as scents and flavoured, etc. and to export jute made handicrafts, snake skin, crocodile skin, lizard skin made articles such as ladies venity purse bags, jewellery boxes.

*H.Y. Kwan (Australia) P. Ltd, P.O. Box No. 2713, Sydney, NSW 2001, Australia. The firm desires to import green snail shell, trochus (Trocas) shell, other commercial shells.

*Ming Jyh Enterprise Co. Ltd, No. 309, Wu Fu 4th Road, Kaohsiung Taiwan, R.O.C. The firm desires to import mixed metal scrap.

*Tightrock Corporation, 5-14, 1-Chome Nishi-Kujoy, Konohana-ku, Osaka-554, Japan. The firm desires to import jewellery, precious stones such as diamond, emerald, ruby sapphire, opal, alexandria as also novelty articles.

ANNOUNCEMENTS

AWARDS

FIE Awards

The Fuel Instruments and Engineering (FIE) foundation awards of Rs 25,000 each for science, industry and technology were given to Mr Kailash Chand Jain, Delhi; Mr A.R. Iyer, Dehra Dun; Dr S.M. Patil, Bangalore; and Dr Promod Paranjape, Bangalore.

NPL Merit Awards: 1979

The merit awards of the National Physical Laboratory (NPL), New Delhi, have been given to six teams for their contributions relating respectively to: (i) Development and establishment of national standards and echelon I calibration facilities for electrical and electronic measurements; (ii) Updating of time and frequency standards; (iii) Development of cadmium sulphide-copper sulphide solar cells; (iv) Upper ionospheric modelling; (v) Development of ultrasonic transducer technology for various applications; and (vi) Fabrication of crystal puller.

CONGRESS & ASSEMBLY

Asian Productivity Congress, 1980

The Asian Productivity Organization, Tokyo, is organizing the Asian Productivity Congress from 27 to 30 October, 1980 in Hong Kong. The main theme of the Congress will be "New Dimensions of Productivity and Development Strategies for 1980s".

For further details contact: Hong Kong Productivity Centre, 21st Floor, Sincere Building, 173, Des Voeux Rd, Central, Hong Kong, P.O. Box 6132, Cable Address: PROCENTRE HONGKONG, Tel: 5-443181. Or Asian Productivity Organization, Aoyama Dai-ichi Mansions, 8-1-14, Akasaka, Minato-Ku, Tokyo 107, Japan, Telex: J26477 APOFFICE, Cable Address: APOFFICE TOKYO, Tel: (03) 408-7221.

World Assembly of Small & Medium Enterprises

The First World Assembly of Small and Medium Enterprises (WASME) is being organized under the aegis of International Association of Crafts, Small and Medium Enterprises for three days beginning from November 12, 1980 at New Delhi.

The main objectives of this Assembly include, among others, formulation of strategy for greater technical cooperation and transfer of technology between small and medium enterprises of developed and developing countries and establishing closer ties of understanding and cooperation amongst representative organizations of different countries.

For further details contact: The Secretary General (WASME), National Alliance of Young Entrepreneurs, 301-303, Saraswati House, 27, Nehru Place, New Delhi 110019.

FAIRS

Texpo India 80

An international cotton textiles fair—Texpo India 80—organized by Texprocil will be held from 15 to 17 November 1980 at Hotel Oberoi Towers, Bombay.

Manufacturers and exporters will exhibit the widest range of cotton fabrics, made ups, yarn and sewing thread from all over India.

Machine Tool Fair

The 10th Japan International Machine Tool Fair will be held in Tokyo from October 31 to November 11, 1980.

For further information write to: Tokyo International Trade Fair Commission, 7-24 Harumi 4-chome, Chuo-ku, Tokyo, Japan.

TRAINING

The Administrative Staff College of India is organizing the following programmes:

1. Manpower Management in Financial Institutions (September 1-6, 1980).

The main objectives of the programme are to facilitate exchange of experiences; identify areas where management action is needed, and enhance managerial skills in problem solving.

Senior executives responsible for manpower management at the planning and implementation level in banking, insurance, and other financial and investment institution are eligible for the course.

2. Investment Planning and Project Evaluation (September 1-12, 1980).

Persons holding senior positions connected with project formulation and evaluation (e.g. nominees from the Central and State Government departments, financial institutions, banks, public sector undertakings and private companies) are eligible for the course.

For further information write to: The Programme Officer, Administrative Staff College of India, Bella Vista, Hyderabad 500475.

DGTD REGIONAL CENTRES

Two more regional centres of the Directorate General of Technical Development are being opened shortly at Kanpur and Bombay in addition to the earlier ones at Madras and Calcutta. The functions of these centres would be: (i) registration of units under the de-licensed scheme, (ii) rendering technical advice and assistance to field organizations of the government, (iii) providing information to headquarters, (iv) interpretation of import and other policies, (v) providing entrepreneurial guidance, and (vi) liaison with State Governments and industries.

PUBLICATIONS

Directory of Industrial Consultants, Industrial Development Bank of India, Nariman Bhavan, 237, V.K. Shah Marg, Bombay 400021. pp. 146. Price Rs 20.

The directory is divided into three parts—Part A—technical consultants; Part B—non-technical consultants, including chartered cost accountants, and Part C—research laboratories affiliated to the Central and State Governments and the Council of Scientific and Industrial Research. It also covers the consultants in the category of corporate bodies, firms and individuals (F.E., 25.5.80).

World Trade Review by M. Visvesvaraya Industrial Research and Development Centre; Ramdas G. Bhatkal, Popular Prakashan Private Ltd, Bombay 400034. pp. x + 158. Price Rs 25.

The Journal provides information on recent developments relating to India's foreign trade.

The journal has seven sections, beginning with major events and developments in international trade during September-December, 1979 and which are of relevance to the Indian economy. Section I provides information on commodities and products, such as agriculture, food and raw materials and crude oils and oil products. Section II gives news about countries and markets. Information is given on India's trading partners in Asia, Europe and America. Section III consists of several trade promotion measures. Some important information is given on Indian trade fairs held in several countries. Various policy matters are discussed in Section IV. Information about recent changes in export-import policies is given in this section. Section V deals with recent changes in rules and regulations of international organizations. Section VI provides information on international services such as banking and financial matters of India and international shipping facilities and so on. Miscellaneous information such as on branding and forwarding is given in Section VII. Lastly, the activities of the Visvesvaraya Centre, Bombay, are described (B.S., 20.4.80).

Catalogue of Handtools by Trade Development Authority, New Delhi.

The Handbook, the first in the series "India exports", is an illustrated catalogue on the hand and small tools industry containing information on the growth, status, technology, standards, quality control and product range.

The handbook contains company and products profiles of leading manufacturers like Gedore Tools, Hindustan Everest Tools, Taparia Tools GKW, Victor Tools Corporation, Himalaya Tools and Sahdev Tools Manufacturing Corporation. With over 50 colour photographs, the handbook has been brought out keeping in mind the international requirements.

Some of the major items covered in the handbook include spanners, drill rods, sockets, pliers, hammers, screw drivers, vices, chisels, spades, axes and trimmers (E.T., 11.7.80).

INDUSTRIAL NEWS DIGEST

Volume 3 Number 9 September 1980

CONTENTS

Editor: S.K. Nag

Asst. Editor: V.K. Sharma

Ed. Asst.: Madhu Bala

Published by the Publications &
Information Directorate, CSIR

Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0 50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

Miscellany 1-2

Industry Profile

Tape Recorders 3-4

Industrial News

Steel export policy, Duty exemption on soda ash, EEPC delegation, Solar power plants, Investment limit 5-7

Growth in electronics industry, Electroslag welder, Welding outfit, Magnetic flowmeters 7-9

Plastics units in UP, Lacquer CA, Coating technique, Primers, Electro-wire galvanizing, Titanium production, Super plastic alloy 9-11

Explosion process for pulping, Leather printing, Static ribbon pattern preventer, Sweet wine, New cement process 12-13

Trade Enquiries 14-15

Announcements

Awards; Symposium; Fairs & Exhibitions; Japanese Market Reports; Publications 16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate
(CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

Technology Import - Emulating the Japanese Style

The Department of Science and Technology and the National Committee on Science and Technology have of late come to realize that if Indian industry wants to do better, it should emulate the Japanese model of technology import. Japan had been buying sophisticated technology from all over the world paying outright for it. Once the technology is bought, Japanese companies and R&D establishments modify it to suit their requirements. The improvements made by Japan in imported technology had been so amazing that even before the technology exporting company introduces its products in the market, Japan is already in the market with an improved product based on the same technology. That is how it has captured markets in most advanced nations like USA, West Germany and Britain.

The Indian industry on the other hand has been lingering in failure because of its dependence on foreign collaborations, lack of built-in R&D to modify and adapt imported know-how, and loss of foreign exchange by way of royalties and other charges. Most of the industries which had imported technology years ago are trailing in obsolescence and are frantically seeking new technology abroad. The government has set up a committee under the Department of Science and Technology to work out the details of the organizational mechanism to ensure adaptation of foreign technology brought into the country in future. Obviously, the first and the major step is to encourage intensive R&D in industry.

The new industrial policy statement has considerably liberalised technology import. Import of technology will now be allowed on the ground of economies of scale and competitiveness of Indian products abroad. Only those companies which have a sound R&D base will be allowed to import technology henceforth. These companies can in turn transfer the know-how to new units.

The policy also lays down that "Indian industry must earmark substantial resources for R&D to constantly update technologies with a view to optimizing the utilization of scarce resources, rendering better service to the consumers and achieving greater exports."

One of the steps taken by the Department of Science and Technology is that a research unit in any industry will have to be registered with the Department for entitlement to various concessions.

Industrial Forest Policy

It is heartening that the government is giving serious thought on the formulation of an industrial forest policy to ensure wood supplies to the paper industry. In fact, there has been an urgent need for some such move as could rescue the paper industry which has been in a crisis for quite some time.

The enormity of wood requirement of the pulp and paper industry can well be understood from the fact that one tonne of writing and printing paper is made

out of 2.8 tonnes of wood. With expanding education, the per capita consumption of paper (2 kg at present) is going to increase and so is the requirement of wood to make it.

The need for an industrial forest policy assumes further significance in view of the fact that, if deforestation continues at the present rate, a time will come when there will be no wood left to meet the requisites of the pulp and paper industry. As it is, the annual per hectare availability of 0.5 cu. m of wood in India is alarmingly low in comparison to many parts of South East Asia where it is five times higher on the average.

One of the serious drawbacks in forestry development has been the lack of integration of forestry and forest-based industry, the former being in the state sector and the latter in the private sector. Therefore, there is a need to integrate these two sectors.

Looking a little beyond the problem of pulp and paper, the forests, when well managed, can deliver plenty of other goods such as oils, gums, resins and herbs which are all in good demand at home and abroad.

From Wood Chips to Oil

Nature took a wide variety of organic materials, covered them with layers of earth and waited about 500 million years for these materials to turn to oil under heat and pressure. Men cannot afford to wait that long. Last year Sabri Ergun and coworkers at the Lawrence Berkeley Laboratory, University of California, simulated nature's process to obtain synthetic oil from wood chips. Only, Ergun's team took less than an hour for the whole process. They mixed wood chip with water and produced the oil under high pressure within a pressure vessel.

Synthetic fuel from wood was produced by Frans Fischer way back in 1920s using wood flour mixed with anthracene oil. However, Ergun found a way to do away with both wood flour and anthracene oil which are very expensive. Thus, Ergun and his team are the first to produce synthetic oil entirely from wood.

The oil that Ergun and his team obtained is equivalent to 6 grade bunker fuel oil, which can be used to power ships or to produce electricity in an oil-fired power plant. Ergun estimates that oil from wood chip could be produced at about \$ 29 a barrel, which is competitive with the present price of imported crude.

INDUSTRY PROFILE

TAPE RECORDERS

Consumer electronics industry has made significant advances after the Second World War, not only in the advanced nations like USA, UK, France and Japan but also in developing economies of Hong Kong, Singapore, South Korea and Taiwan. India, however, jumped into this field very recently. The total production of electronics goods in 1978 stood at Rs 591 crores, of which consumer electronics sector accounted for only Rs 159 crores. This figure increased to Rs 170 crores in 1979. Tape recorder is a rather new segment of this industry. The production of tape recorders was valued at Rs 15 crores in 1978, i.e. about 10% of the total production of consumer electronics.

Tape recorder assembly started in India in 1972-73 in a very small way with completely imported kits where only few connections had to be made by the manufacturers. This was the state till the end of 1974. Thereafter, cabinets for tape recorders and electronic circuitry were made in the country whereas tape-deck mechanism, motor, head and record-play switches were being imported. Many items like tape-deck mechanisms, record playback switches, etc. have now been Indianised and are being manufactured in the country.

From a very low base in 1973, the tape recorder production has been steadily gaining momentum along with socio-economic changes in the country. During the period 1973-79 there has been a six-fold increase in production (Table 1). This combines the contribution of the organized as well as the small scale sector. In fact, the industry has been dominated by the small scale sector which contributes the bulk of production.

There were two units in the organized sector in 1975 contributing only 10% to the total production. Their share has since increased to 30% with two more units coming into being. The government has allowed massive expansion of capacity in the tape recorder industry. The total licensed/approved capacity for the tape recorders including car stereos is 121,850 sets in the organized sector and 499,340

TABLE 1—PRODUCTION OF TAPE RECORDERS

	Number	% Increase over previous year
1973	30,000	—
1974	35,000	16.7
1975	50,300	43.7
1976	68,718	36.6
1977	112,000	63.0
1978	151,000	34.8
1979	179,000	19.0

sets in the small sector. Both the organized and the small sector, however, seem to be slack in executing the licensed capacity.

There are at present about 30 manufacturers of tape recorders in the country. Eight additional units are making cassette tapes. Some important manufacturers of tape recorders are: Murphy India Ltd, Bombay; Telefunken India Ltd, New Delhi; Televista Electronics, New Delhi; Weston Electronics Pvt. Ltd, New Delhi; Beltek Electronics Pvt. Ltd, New Delhi; General Electronics of Haryana Pvt. Ltd, Faridabad; and Paras Electronics Pvt. Ltd, New Delhi.

Market

Tape recorders no doubt hold a good market in the country as the socio-economic scene is changing fast. Moreover, the growing remittances, particularly from the middle-east, have created new pockets of potential consumers. Some manufacturers have already started efforts to seize the opportunity through advertisement campaigns. Domestic consumers prefer to go for imported sets because of better quality standards even though they have to pay 40-50% more. It is, therefore, not surprising that a large part of the domestic demand is satisfied through imported or smuggled sets.

Exports

As indicated earlier, India's export of tape recorders are very meagre. The principal buyers are Oman, Egypt, Hungary, Nigeria and Yugoslavia. Export figures for period 1974-78 are given in Table 2 [*Industr. Times*, 1980, 22(6) 4; *Annu. Rep.*, Dept. of Electronics, 1979-80; *Tribune* 21.7.80; *Times of India Directory & Yearb.* 1979].

TABLE 2—EXPORT OF TAPE RECORDERS
(Qty in Nos; val. in Rs lakhs)

1974-75	Nil	Nil
1975-76	1,471	0.96
1976-77	892	1.19
1977-78	9,048	22.45

INDUSTRIAL NEWS

GENERAL

Steel Export Policy for 1980-81

Under the Export Policy for 1980-81, export of the following items of steel will be canalized through Steel Authority of India Limited (SAIL) under Open General Licence-4 (OGL-4).

Ingots, blooms and slabs, rolled/cast billets, bars and wire rods, rolled structural sections, hot rolled plates/sheets/strips, cold rolled sheets/strips/coils, galvanized corrugated/plain sheets, rails and rolled bearing plate bars, carbon/silico manganese/chrome sulphur vanadium spring steel in all categories other than wire rods.

SAIL will also be the canalizing agency for export under OGL-4 for various ferro-alloys, viz. (i) ferro-manganese slag, (ii) ferro-manganese (other than ferro-manganese containing less than 0.05% carbon)/silica manganese, (iii) ferro-chrome (other than ferro-chrome containing less than 0.03% carbon and nitrogen bearing/silica chrome, and (iv) ferro-silicon [*Econ. commerc. News*, 1980, 10(18), 5].

Duty Exemption on Soda Ash

The Central Government has extended the customs duty exemption on soda ash upto March 31, 1981.

Soda ash, an essential raw material in the glass and silicate industries, is in short supply. Imports are, therefore, being arranged to reinforce the supply [*Chem. Times*, 1980, 7(5), 10].

EEPC Delegation to EEC Countires

The Engineering Export Promotion Council is sending in September-October, 1980 to EEC countries a delegation of 30 members representing firms which have undertaken projects abroad on turn-key basis or sub-contracting basis or supplied plant, equipment, spares, etc. basis or worked together with prime contractors preferably from EEC countries, USA, Japan, etc. The visit of this delegation will coincide with the conferences on cooperation between EEC contractors and Indian firms interested in sub-contract work in third countries. The objective of the conferences is mainly to acquaint the EEC contractors with the experience of Indian firms in undertaking large projects abroad, the areas of specialization and the capabilities, both technical and managerial, of Indian firms for undertaking projects independently on turn-key basis or sub-contracting basis in collaboration with main contractors from developed countries.

The delegation is likely to include representatives from different fields like irrigation, air fields, power generation and transmission, water supply and sewage systems, bridges, tunnels, buildings and sanitary fittings, railways, etc.

More Solar Power Plants Planned

The Union Government has planned to set up a series of solar thermal power plants in the next three years.

A 10-kilowatt solar thermal power plant has already been installed at the Indian Institute of Technology in Madras in collaboration with the Bharat Heavy Electricals Ltd.

The government has also decided to set up a centre for prototype production and development, including field trial and demonstration in rural areas, of solar thermal devices and systems. Estimated to cost about Rs 50 million, the centre would help large scale demonstration and application of solar thermal devices. The Union budget has allocated Rs 22.5 million for research and development on new energy resources.

Current researches relate to development of solar thermal devices and systems based on the thermal effects of solar radiation, development of photovoltaic devices and systems for direct conversion of solar energy into electricity and biomass and bio-conversion technology.

Nearly 40 research institutions are working on projects in the field of solar energy, nearly, 10 in the field of biomass, and about 25 in the field of hydrogen energy, wind energy, geothermal energy and electrochemical storage.

Prototype grain dryers up to 10 tonnes/day capacity are undergoing field trials while a project is underway to develop a tobacco dryer in Andhra Pradesh.

Several types of solar water heating systems have been developed and put to use in hotels and hospitals.

A solar-powered cold storage plant with absorption refrigeration system is at present undergoing performance evaluation.

The Department of Science and Technology has constituted a hydrogen energy task force to identify research and development programmes for the production, storage and utilization of hydrogen as a substitute for petroleum products (F.E., 16.7.80).

Investment Limit for Small Scale & Ancillary Units

The government has issued a notification bringing into effect from August 1, 1980 its decision to raise the investment limit in the case of small scale units to Rs 20 lakhs and for ancillary units to Rs 25 lakhs for the purpose of licensing under the Industries (Development and Regulation) Act 1951.

Small scale industrial units having investment in fixed assets in plant and machinery, whether held on ownership terms or by lease or by hire purchase not exceeding Rs 25 lakhs, are exempted from licensing provisions.

This will be subject to the condition that such a unit will not be a subsidiary of or owned or controlled by any other undertaking. In case any small scale or ancillary unit is a subsidiary of or owned or controlled by any other undertaking, it will be subject to the normal licensing provisions under the I.D.R. Act.

Other clarifications made are as follows:

1. Industrial undertakings which have crossed the limit of Rs 10 lakhs in the case of small scale units and Rs 15 lakhs in the case of ancillaries and have got themselves registered with the D.G.T.D. or other technical authorities on or before August 1 will be treated as small scale units and ancillaries, as the case may be. Such units will have an option to be transferred to the State Directorates of Industries or to continue with the D.G.T.D. This option will have to be exercised within six months from August 1. However, in the meanwhile—up to a period of six months—these units will receive their raw material assistance through the D.G.T.D. as at present.

2. Small scale and ancillary units which were granted “carrying-on” business licences on crossing their investment limits prescribed prior to August 1 will not be eligible to be treated as small scale units and ancillary units in accordance with the revised definition from August 1. These units will no longer be required to obtain COB licences provided their cases fall within the enhanced limits now fixed for small scale and ancillaries. No further action will be taken on their COB applications. They will be treated as small scale and ancillary units from August 1.

3. Some units which have crossed the previous investment limits of Rs 10 lakhs/Rs 15 lakhs prior to August 1 and which had neither obtained nor applied for COB licences as was required under the extant law will have breached the provisions of the Industries (Development and Regulation) Act.

In view of the fact that they now qualify for treatment as small scale and ancillary units eligible for exemption under the licensing provisions, the government has decided to treat such breach as technical breach only (Tribune, 4.8.80).

ENGINEERING INDUSTRY

14% Growth in Electronics Industry

Production in the consumer electronics sector increased in value from Rs 1,570 million in 1978 to Rs 1,700 million in 1979, registering a growth of 14%.

According to the annual report of the Department of Electronics, one of the major features of the production was a 15% growth in items such as radio receivers, television receivers and tape recorders over the 1978 production level.

The production of television sets in the country increased from 270,000 sets in 1978 to 311,000 sets in 1979, registering a growth of about 15%.

Despite the increase in the consumer prices of T.V. sets during 1979, the growth in production was higher than that achieved during 1978.

The share of the small scale sector remained at almost the same level of 77% of the production as in 1978.

The production of cassette tape recorders (including radio cassette tape recorder combination) increased by 19% during the year. In absolute terms, the production increased from 151,000 in 1978 to 179,000 in 1979.

The growth rate for the units in organized sector and small scale sector was almost the same. The prominent development of this sector was marketing of cassette tape recorders by various small units in the price range of Rs 400-500.

The production of electronic calculators increased from 150,000 in 1978 to 166,000 in 1979, registering a growth of 11%. The increase in production was entirely due to growth in production in the organized sector.

During the year mass communication equipment consisting of studio equipment and transmitters worth Rs 10 million were manufactured for use by All India Radio and Doordarshan (Tribune, 21.7.80).

Electroslag Welder

Advani-Oerlikon has come out with India's first consumable nozzle type electroslag welder (model ESW-1). It is a compact, portable unit which can be clamped directly on to the job. It is suitable for the thickness range of 25-40 mm and joint length up to 2 m.

Electroslag welding has been accepted as an ideal process for making butt joints in heavy sections, such as boiler shells and pressure vessels, since the joint can be completed uninterruptedly in one single pass at exceptionally high deposition rates. A layer of molten slag melts the filler metal and the joint surfaces to be welded, and at the same time shields the molten pool. The conductive slag is maintained in a molten condition by its resistance to the electric current passing between the electrode and the work. The electrode is a continuous bare wire.

The plates to be joined are kept in the vertical position and the weld pool is contained in a mould provided by water-cooled copper shoes which automatically slide upward on the plate surfaces as the welding progresses from the bottom to the top. The wire-feeding mechanism and associated equipment also ride upward as the weld progresses.

In the consumable guide electroslag welding method, which is a modification of the wire method described above, a metal tube extending the full length of the weld joint is used to guide the welding wire to the welding zone. The moulds and all wire-feeding equipment remain stationary, with wire being the only moving part. The guide tube melts in the weld pool as the pool rises, supplying additional filler metal.

For further details, write to: Advani-Oerlikon Ltd, P.B. No. 1546, Bombay 400 023.

New Welding Outfit

Advani-Oerlikon has recently come out with a unique CO₂/MIG welding outfit, CITOFIL CO-31(R), which uses a rotary power source (a motor generator) in place of the rectifier used in the normal CO₂/MIG outfits. Developed for the first time in India, it is ideally suited for conditions where heavy mains supply fluctuations occur, whether in the shop or at site.

The outfit consists of a mobile, constant potential rotary generator with built-in thyristorized controls to regulate the wire feed and permit two/four track weld

cycle control, a wire drive unit suitable for 0.8 to 1.6 mm hard wires and 1.2 to 1.6 mm soft wires, and a lightweight gas cooled torch. It is ruggedly constructed to withstand severe site conditions. While facing supply voltage fluctuations, the arc voltage can be adjusted steplessly through the regulator even under load conditions. The machine has excellent static and dynamic characteristics which ensures good arc striking and arc stability. It is suitable for welding carbon steels, low-alloy steels, stainless steels and non-ferrous metals at welding currents up to 300 amps.

For further details, write to: Advani-Oerlikon Ltd, P.B. No. 1546, Bombay 400 023.

Magnetic Flowmeters

Brooks Instrument Division of Emerson Electric Co. Hatfield Pa., have designed the Mag 7000 flowmeter, which with nine different design innovations constitutes an important advance in magnetic flowmeter technology.

Unlike ac-field magnetic flowmeters, the Mag 7000 uses a unidirectional dc-field that eliminates interference from error signals. Such signals may arise from the power supply, eddy currents in the flow itself, or stray electromagnetic fields. In ac meters such error signals must be compensated for by periodically nulling the flowmeter during zero flow. But with Mag 7000, this procedure is unnecessary because absence of electrical interference allows very slow flow rates to be measured with high accuracy.

Whereas other magnetic flowmeters consume increasingly larger amounts of power as they grow in size, the Mag 7000 boasts a low uniform consumption rating of 20 W regardless of flowmeter size (from 1.5 to 30 in).

The Mag 7000 can be used to measure the flow rate of any conductive liquid or slurry, and it can operate even while submerged in 30 ft of water [*Chem. Engng News*, 1979, 57(51), 19].

CHEMICAL INDUSTRY

Plastics Units in UP

Uttar Pradesh having vast agricultural potential is setting up plastic processing units to meet the increasing requirements.

Presently, there are about 340 plastic processing units in the State, most of them in the small sector. These units are concentrated in areas around Kanpur, Varanasi, Ghaziabad, Allahabad and Lucknow. Kanpur alone accounts for more than 50% of the installed units. The existing units are using techniques like extrusion, injection moulding, blow moulding and to some extent laminating while other processes are yet to be exploited by the entrepreneurs.

The total installed capacity of these units has been estimated around 30,000 MT/yr and out of this around 71% of the production is in the form of extruded products. However, the capacity utilization of these units has been much less around 40% mainly because of shortage of raw materials.

With the commissioning of the Indian Petrochemicals Corporation Ltd, Baroda and several other units, the additional availability of various types of raw materials like LDPE, HDPE, PVC and polystyrene would be 1.56 lakh MT/yr.

A survey of demand potential for polypropylene and low density polyethylene based items in U.P. carried out by the IPCL has recommended creation of additional installed capacity of 2,580 MT/yr for polypropylene and 12,514 MT/yr for LDPE. The number of units based on these items required to be set up was placed at 12 and 27 respectively with total capital investment of Rs 4.29 crores.

IPCL in its report had recommended at least 4 units based on polypropylene in U.P. to start with.

Meanwhile 4 small units in the industrial complex for plastic products promoted by the State Directorate of Industries under its package assistance scheme in backward district of Basti have gone into production. The complex has 13 units with an investment of about Rs 1.25 crore for manufacturing plastic items (B.S., 10.4.80).

Lacquer CA

The Central Leather Research Institute, Madras, has developed a lacquer formulation for top coat finishing of leather. The demand for the product is estimated to be around 2,000 tonnes/yr.

Resins, solvents and plasticisers are the raw materials required for the manufacture of Lacquer CA, and all these are available indigenously. A stainless steel vessel with stirring arrangement is the equipment required which can be fabricated indigenously.

A plant having a capacity to produce 150 kg/shift (single shift operation only) of Lacquer CA will be an economical unit.

Further particulars regarding the process (NRDC process No. 818-09-9) can be had from: The Managing Director, National Research Development Corporation of India, 61 Ring Road, New Delhi 110024.

New Coating Technique

The Central Electrochemical Research Institute, Karaikudi, has developed a process for imparting a copper coating to the bottom of stainless steel utensils.

The process has been put to commercial production and products manufactured in accordance with the process are also being exported.

The Institute has also developed manufacturing technique for magnesium metal from raw materials such as low grade magnesite, sea bitterns, magnesium chloride obtained as by-product in the production of titanium, zirconium, etc.

Primers

Zinc Sodium Silicate Primer—The Central Electrochemical Research Institute (CECRI), Karaikudi, has developed a process for the production of zinc sodium silicate primer. The primer can be used for protection of all types of steel structures in marine environments.

The primer provides barrier and cathodic protection to base metal, and it gives a hard, long-life abrasion-resistant coating. Although not in use at present, the primer is expected to have a demand of about 1,100 tonnes/yr. The capital investment for a plant of capacity 150 tonnes of the primer/yr is Rs 7.44 lakh and the cost of production Rs 15,963/tonne. The return on investment is expected to be 81.4%.

Zinc-rich Organic Primer—This primer is used for the protection of steel structures in both marine and industrial atmospheres. CECRI has developed a process for the manufacture of this primer, which consists in incorporating zinc dust in epoxy and polyamide or chlorinated rubber medium. The primer prepared by the laboratory has the following advantages over the conventional ones: it gives better protection under widely varying climatic conditions; the amount of zinc needed is less and hence the cost; and it does not rely on temperature and humidity for proper curing.

The demand for the primer is estimated at 1000 tonnes/yr. The capital investment for a plant of capacity 150 tonnes/yr is Rs 8.43 lakh and the cost of production is Rs 18.5/kg. The return on investment is expected to be 20%.

Electro-wire Galvanizing Plant

Mysore Steel Works, a small scale unit at Dyavasandra Industrial Area near Bangalore has designed and fabricated a continuous electro-wire galvanizing plant. The plant has gone into successful production.

The manufacture of galvanized wire by the cold-dip process at the unit is unique. The advantages of cold-dip, an electro-process, as compared to hot-dip process, are pure zinc coating, even and exact, heavier coating when needed, physical properties of the wire being not affected, control of the weight of the coat by increasing or decreasing speed and no peeling-off or flaking on bend test (Hindu, 9.4.80).

Titanium Production

Mishra Dhatu Nigam (Midhani) has started manufacturing titanium since May 1980. The company has already bagged an order for pure titanium metal forgings from a reputed firm in West Germany where titanium finds extensive application in rockets, aero-engines, power turbines, deep submergence vehicles and chemical industry.

The company will enter the market in early 1981 with bimetals, controlled expansion and heating element alloys which are being imported (F.E., 9.5.80).

Super Plastic Alloy

Alcan Aluminium Ltd (Montreal) has begun marketing an aluminium alloy that can be thermoformed like a plastic. The aluminium zinc and calcium containing material, will allow economical manufacture of complex parts too costly to produce by such traditional metal forming techniques as stamping or casting [*Chem. Times*, 1980, 7(5), 6].

MISCELLANEOUS INDUSTRIES

Explosion Process for Pulping

Dr Heikki Mamers of the CSIRO Division of Chemical Technology (Australia), has developed an explosion method in which bagasse, wheat straw, kenaf bark, rice stalks as well as conventional wood chips yield fibres under the force of an explosive discharge to provide a pulp suitable for paper making.

The process also has the ability to pulp materials unknown to botany. These include milk cartons, fruit juice cartons, cement bags and other high wet-strength materials that often contain in their structure plastic, foil, etc. and that waste paper recycling plants often reject as too hard to reclaim.

The advantages of the process are: a batch of waste paper can be pulped in only a few minutes, compared with more than an hour for conventional techniques; contraries (adhesive tape, string, foil, plastics, glass and other rubbish) survive the process relatively intact, making their subsequent separation fairly easy.

Pilot plant trials with 'synthetic' garbage have shown that the process quickly loosens the fibres of normal waste paper, but leaves the majority of the unwanted components relatively intact. High pressure rapidly converts paper to a soft mass but waterproof papers, tapes, and the like retain much of their integrity. Not only are adhesive tapes undamaged by the explosion but the adhesive even remains attached to the tape. Polyethylene bags, cotton rags and string also remain undamaged; bitumen-impregnated paper is frayed somewhat at the edges, but otherwise intact; polystyrene foam and brittle plastics suffer minimal damage. The process requires little water and hence effluent problems are minimized.

As well as recycled paper, explosion pulping is especially suited to the processing of bagasse, wheat straw and other fast growing crops like kenaf. Normally these materials are difficult to pulp because they contain a high proportion of pith (parenchyma cells). Bagasse can contain 25-30% pith and in wheat straw the figure can be as high as 68%. Upon pulping by standard methods, the thin-walled parenchyma cells readily collapse and inhibit the free escape of water during paper-making. The poor drainage slows down production.

In explosion pulping, however, the parenchyma cells do not just collapse, but disintegrate into small fragments. These pieces could be screened out to yield pulps with much better drainage.

Sugar mills, which generate more bagasse than they use as fuel, may find this process helpful as they can put up a small unit on site to pulp all excess bagasse (Hindu, 2.7.80).

Leather Printing

The scientists at the Central Leather Research Institute, Madras, have produced the exact patterns of the skins of cheetah, crocodile and deer both on the grain and flesh sides of leathers by using photographic method.

This technique needs silk screens and printing tables. After tanning and finishing the surface leather, the printing operation take about two days.

Static Ribbon Pattern Preventer

Uptron Shreetronix Ltd, a joint sector undertaking with UP Electronics Corporation Ltd, has indigenously designed a static ribbons pattern preventer (RPP) using the state of art technique for preventing the formation of ribbon pattern on cone winders in textile industries.

The RPP can replace conventional electromechanical anti-pattern device. This new innovation can perform make and break operations of the order of 30 to 60 a minute. Malfunctioning, if any, is indicated on the front fascia. With built-in over voltage, undervoltage, thermal over-load relay and single phasing preventer, protection is complete. A few of the advantages are: (i) prevention of ribbon pattern formation efficiently and reduction in yarn breakage; (ii) smooth and uniform winding without any flaw; hence, increased production at warping and subsequent process stages; (iii) no moving parts; hence, no wear and tear; (iv) conveniently located, adjustable finger-tip control for Off and On switching periods; and (v) longer life and low power consumption.

The first few of this equipment are working satisfactorily in some cotton textile industries, which have already acclaimed it a money-saver, besides being efficient and faithful. In fact, it pays for itself in less than a year of service.

For more details write to: Uptron Shreetronix Ltd, 46, Rajindernagar Industrial Estate, P.O. Mohannagar 201007, Dist: Ghaziabad (U.P.).

Sweet Wine from Mangoes

The Central Mango Research Station, Lucknow has successfully developed a laboratory technology for producing sweet wines from Indian mangoes, such as *Dashari*, *Langra*, *Chausa*, *Fajli*, *Swarnrekha*, *Safeda* and *Malika*. The most acceptable wine was the one produced from *Fajli*, a mango variety grown mostly in U.P. and West Bengal.

There is also a great potential for making wines and liquors from fermentable fruits and vegetables in India. The potential fruits and vegetables for such fermentation are countless. The major ones are chikoo, sitafal, mangoes, pears, beetroot, grapes, peach, apricots, etc.

Even the humble 'toddy' trees can be scientifically exploited after proper research to produce strong alcoholic drinks like *Arak* [*Indian chem. J.*, 1980, 14(10), 20].

New Cement Process

The Shriram Institute for Industrial Research has successfully developed a process for manufacturing cement from lime sludge. Removal of huge quantities of acetylene generated sludge from the carbide based PVC factory and its conversion into portland cement by burning in a rotary kiln at a temperature of 1400°C will no longer pose any problem [*Econ. Trends*, 1980, 9(11), 40].

TRADE ENQUIRIES

*Bengal Corporation, Noor Mansion 353, Kurbanigonj, P.O. Box No. 216, Chittagong, Bangladesh. The firm desires to contact suppliers/manufacturers of tubewell fixtures, pump sets, motors and control panel, kallurghat iron removal plant, centrifugal pumps, charcoal filter media/increase of filter area, piping, valves, IMGD water treatment plants, sedimentation, coagulation filtration and disinfection systems, electrical switchgears, controls, transformers, stand by generator for alternate power arrangement, supply of AC/PVC water grade pipes, centrifugal pump sets, electrical controls and appurtenances for booster pumps, steel tanks, water meters, tapping tools, corporation cock, vehicles, pipe & fitting for service connection.

*Overseas Traders, 83, High Street, Rayleigh, Essex SS6 7EJ, England. The firm desires to import foodstuffs, shoes, suitcases and battery cells, etc.

*M. Oka, A-504, 35 Senrioka-Kami, Suia, Osaka, Japan. The firm desires to export automatic seamless glove knitting machines.

*Maharaj Freres & Cio, 41 Rue Blenac & 11, Rue Schoelcher, Fort-De-France, (Martinique), Antilles Francaises, Boite Postale-528. The firm desires to import ice cream freezers, polishing cloth, carved sandalwood and metal furniture, brasswares, electric power tools, incenses, kerosene stoves and handtools.

*Tajudeen Akomolafe & Brothers, 47, Idumagbo Avenue, G.P.O. Box No. 5156, Marine, Lagos, Nigeria. The firm desires to import handtools, electrical accessories, bicycle spare parts, wall clock & general merchandise.

*Bengal Refrigeration Co., 11 New Airport Road, Tajagaon, Dacca-8, Bangladesh. The firm desires to import technical know-how and machinery to set-up a plant for manufacturing (1) water coolers, (2) deep freezers, (3) electric and gas water heaters, (4) gas cooking ranges and ovens.

*A Shayesteh, P.O. Box No. 1608, Tehran, Iran. The firm desires to import photo films, projectors and other allied equipment.

*Juan Palmorola Nogue, Choconta, 4, 1, D., Madrid 33, Spain. The firm desires to import marabou ribbon, clothes, silk, Indian baskets, typical artwork, artificial flowers and general Indian products. It wants to export hinges doors and general spanish products.

*Simon Enterprise, 400/1, New Eskaton Road, Post Box No. 3283, Dacca, Bangladesh. The firm desires to import electrical equipment, electrical bulbs, gas turbine, steam turbine and diesel generating sets, irrigation projects equipment, pharmaceutical finished and raw goods, sugar, clothes, dyes and chemicals, and office stationeries.

*I. Saka & Sons, 54, Inabere Street, Lagos, Nigeria. The firm desires to import hardwares, sunglasses, sport goods, watches, stationery, baby walkers, balls and building materials.

*Mercantile Overseas Trading Co., 31, Station Road, Wellawatte, Colombo 6, Sri Lanka. The firm desires to import T/cotton shirting - 80/20 and 65/35,

sanitaryware, agricultural implements, garden tools, kerosene lamps, hurricane lanterns, electrical accessories like plugs, switches etc., sewing threads, umbrella frames, PVC plastic cloth for rain capes, decorated tumblers, 100% cotton printed flannel, cotton yarn dyed flannel, cotton bleached flannel, nylon taffetta and hardware.

*Alhaji Idris Ibrahim & Sons, 8, Palm Church Street, P.O. Box No. 1040, Lagos, Nigeria. The firm desires to import bicycle spare parts, yellow duster handkerchiefs, sewing machine spare parts, soap making and cloth washing machines, jewellery and electrical spare parts, etc.

*Mohammad B.H. Gulpayghani, 2nd Floor, Bazar, Plastic Moqablay Pamenar, 15 Khurdad, Tehran, Iran. The firm desires to import steel springs and cellophone adhesive.

*Harmor Trading Co., Ferdowal SQ., Avenue, Iranshahr Building No. 3, 2nd Floor, Tehran, Iran. The firm desires to import tyres and tubes, iron beams and auto spare parts for hillman (Paykan).

*Blairgold Ltd, 505 Triumph House, 189, Regent Street London, W1R 7 FE, England. The firm desires to import cereals, white sesame seeds and soyabean and export animal feeds and nutrition, for poultry sheep and cattle.

*H. Kohan Corporation, Thermocar, Bahar Inter-section, No. 469 Avenue Taleghani, P.O. Box No. 41/1842, Tehran-14155, Iran. The firm desires to import radiator valves and lockshields, radiators aluminium, oil and gas burners, round and hexagonal brass rods - 11 mm to 26 mm.

*G. Gastoye (Nigeria) Co., 61 Princess Street, 2nd Floor, G.P.O. Box No. 8011, Marina, Lagos, Nigeria. The firm desires to import leather watch straps, leather belts, kitchen utensils, cutleries, sport goods, handkerchiefs, baby napkins, dusters, leather wallets, purses, building materials, sanitary-wares, footmates, hats and caps, kerosene stoves, electrical accessories and fans, batteries, imitation jewellerys, etc.

*Gurdas International Co. Ltd, Zahiroleslam Avenue, No. 4, Mushir Muazam Street, Tehran 11, Iran, P.O. Box No. 3282. The firm desires to import acrylic raw fibres & viscose, all kinds of thread and yarns, all kinds of ribbons, all kinds of garments and electric and electronic kitchenware and hardware products.

*Intercon Automotive Ltd, Automotive Hause, Upper Villiers Street, Wolverhampton, West Midlands, WV2 4NP, UK. The firm desires to export genuine massey ferguson tractor steering parts.

*Comptor Aûstral De Fournitures Industrielles Automobiles, Siege Social, Magasins, R.T. 1 Bis Ducos, B.P. 2343, Noumea, New Caledonia, France. The firm desires to enter into business relations with suppliers of hard-ware, garages handtools, agricultural material, handtools for building, precisions tools and machines tools.

*Iran Nataf Co. Ltd, G.P.O. Box No. 637, Tehran, Iran. The firm desires to import ordinary type of blood pressure apparatus, thermometer, stethoscope, surgical items, orthopaedic items, medicines and sewing machines.

ANNOUNCEMENTS

AWARDS

EEPC Awards

The Engineering Export Promotion Council (EEPC) has awarded "All India Rotating Shields" to four companies which had distinguished themselves in the field of exports during 1978-79.

In addition to this, 12 regional shields were distributed to the best exporters/manufacturers in the large and small scale groups and export houses and merchant exporters from different regions.

Besides this, 70 exporters were given "certificates of export excellence."

Winners of the All India Rotating Shield include: Tata Engineering and Locomotive Co. Ltd, Bombay; Kajeco Industries, Agra; HMT, Bangalore; and Water and Power Consultancy Services, New Delhi.

Regional shields: Heavy Engineering Corporation, Ranchi; Gedore Tools, New Delhi; Bharat Electronics, Bangalore; Bajaj Auto, Poona; Govind Steel Co. Ltd, Calcutta; Victor Tools Corporation, Jullundur; Rajan Trading Co., Madras; Industrial Agencies Corporation, Bombay.

Export Houses and Merchant Exporters: Bhagwati International Private Ltd, Calcutta; Hero Cycles, Ludhiana; Hyderabad Asbestos Cement Products, and Kirloskar Oil Engines Ltd, Poona.

Export Awards

The Ministry of Commerce has formulated a system of giving awards in the form of trophies and certificates of merit to different organizations in recognition of their outstanding export performance. The Ministry is now inviting nominations for award on the basis of the export performance during 1979-80.

There are 38 broad categories of commodity groupings for the purpose of granting awards.

For further details contact: The Director General of Commercial Intelligence and Statistics, 1, Council House Street, Calcutta 700 001.

SYMPOSIUM

A symposium on "Food industry wastes: Disposal and recovery", organized by the Association of Consulting Scientists, will take place at the Hotel Norwich, Boundary Road, Norwich, Norfolk, from 11 to 13 November 1980.

Copies of the Programme and Registration Forms are available from: The Secretary, Association of Consulting Scientists, Owles Hall, Buntingford, Herts. SG9 9PL, England. Telephone: 0793 - 72665.

FAIRS & EXHIBITIONS

International Trade Fair

An International Trade Fair of Construction Machinery, Implements and Building Material will be held from 12 to 17 October, 1980 in Poland.

Range of products will include: basic building materials, sanitary and water-waste fittings, heating and ventilation equipments, building engineering machines, implements and complete lines for manufacturing of building materials, electric handtools for construction work, machines for mechanisation of works in building engineering, protective chemical agents used in building industry.

For further details contact: Information Centre of Poland, 12-A, Mahatama Gandhi Marg, New Delhi 110024.

International Engineering Fair

Subcon Asia 80, the first exhibition in the Asia-Pacific region for the subcontracting and supportive industries and allied engineering services, organized by Eurotech Management Ltd will be held at the Hyatt convention centre, Singapore, from 8 to 12 December, 1980. A two-day purchasing and materials conference, also the first of its kind, will be held during the Fair.

The highlights of the Fair are engineering skills services and products in the growth sectors of South-east Asia—oil and oil related industries, electrical trades and metal goods.

Electronics Show

The Korea Electronics Show 1980, will be held from 7 to 16 October in Seoul, Republic of Korea. This will include exhibition of electronic products by more than 250 major companies out of 700 electronic manufacturers in Korea and also by many from the US, Japan and other countries.

For further details contact: Mr Wan Hee Kin, President, Electronic Industries Association of Korea (ELAK), RM 1101, World Trade Center Korea, 10-1, 2 K.A. Hoehyun-Dong, Chung-ku, Seoul, (Korea).

Floating Import-Export Exhibition

India's first floating import-export exhibition on a ship will be sailing soon for a cruise around Africa and the Arab countries.

Indian exporters who want to display their products in the floating exhibition should get themselves registered with the *Institute of Export Information, D-10 Hauz Khas, New Delhi 110016*. There is provision for first class airconditioned cabin accommodation with food for representatives of the participating companies who want to travel in the ship to book on-the-spot orders.

JAPANESE MARKET REPORTS

The Indian Investment Centre has received copies of reports on Japanese markets for the following items: (i) professional photographic and audio-visual equipment; (ii) educational equipment; (iii) jewellery and personal accessories; (iv) processed foods (soups, jams, confectioneries); (v) health-care and exercise equipment; and (vi) baby products.

These reports have been prepared by Japan External Trade Organization as a part of "Your Market in Japan" series and give detailed information about the existing market for these products in Japan and also distribution channels, etc. The reports are available for reference in the Information Division of the Centre.

PUBLICATIONS

Fatty Acids edited by E.H. Pryde (American Oil Chemists' Society, 5085, Sixth Street, Champaign, USA) 1979. pp. 630. Price \$ 35 for nonmembers.

The monograph is divided into the following eight chapters: Sources and Synthesis; Physical Properties; Reactions of the Acid or Ester Group; Reactions of the Methylene Group; Reactions of the Double Bond; Fatty Acid Derivatives; and Commercial Aspects [*Chem. Times*, 1980, 7(26), 2].

Handbook of Statistics on Man-made Synthetic Fibre Yarn Industry, by Association of Synthetic Fibre Industry; First Floor, Raj Mahal, 84, Veer Nariman Road, Bombay 400 020. pp. 119.

Man-made Fibre Statistics—1979 by Association of Man-made Fibre Industry; Resham Bhavan, 78, Veer Nariman Road, Bombay 400 020. pp. 129.

The two publications contain comprehensive statistical data on production and capacities, market prices, imports, exports, excise-duty, etc., in respect of non-cotton yarn and fabrics (F.E., 27.7.80).

Chemprofiles: India by O.P. Kharbanda; Sevak Publications, Bombay 400031. pp. 623. Price Rs 150.

All major industrial chemicals of commercial importance, particularly in the Indian context have been included. The book is divided into two parts. Part I containing 83 chemicals provides information on typical processes of manufacture and their characteristics; names of producers in India including a map for location; their capacity of production; future growth prospects, taking into consideration imports, consumption, and additional capacity licensed, recent price in India and important countries; use pattern in India and elsewhere; and international information about capacity, production, technology and future trends in technology.

The type of information available in Part II includes: financial aspects; product mix and data on production and sales; milestones in the development of the unit; particulars of management; source of know-how; expenditure of units on selected items—raw materials, power and fuel, employees, etc.; consumption of raw materials (both imported and indigenous); expansion and diversification proposals, including R&D; and rights and bonus declared [*Chem. Times*, 1980, 7(22), 2].

INDUSTRIAL NEWS DIGEST

Volume 3 Number 10 October 1980

CONTENTS

Editor: S.K. Nag

Asst. Editor: M.M.S. Karki

Ed. Asst.: Madhu Bala

Published by the Publications &
Information Directorate, CSIR
Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

Miscellany 1-2

Industry Profiles

Toluene 3-4

Bread Industry 5

Industrial News

Energy plan, Tiny sector,
Sickness in small scale sector 6-7

Coil winding machine, TV glass
shells unit, Electronic tuner,
Special purpose machine,
Magnetic crack detector 7-8

Polish technology, Phthalic
anhydride, Fatty alcohols
plant, Alcohol from mahua
flowers, Adhesive, Phosphatic
fertilizer 9-11

Diamond export, Masonry
cement, Newsprint making
process, Neem tree, Hyacinths,
Flavoured tea, Mixer 11-13

Trade Enquiries 14-15

Announcements

Awards; Conference &
Symposium; Exhibitions;
Research and Training Centre;
Publications 16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate
(CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

Dimensions of Post-industrial Society

Though on the basis of cultural unity the entire human settlement can be divided into a number of societies, one can always identify the structural features common to them. Based on such commonality, the entire society can broadly be divided into: pre-industrial, industrial and post-industrial society.

Pre-industrial society is dependent on raw labour power and the extraction of primary resources from nature. Life is a primary game against nature. On the other hand, industrial society is organized around the axis of production and fabrication of goods. Thus, it is a goods producing society. Technical knowledge is applied to social affairs in a methodical and systematic way. In industrial society, life is a game against fabricated nature. The machine predominates and the rhythm of life is mechanically faced, time is chronological, methodological and evenly spaced. Energy has replaced raw muscle. It is a world of coordination, a world of scheduling and programming. The industrial society of the twentieth century with its dependence on technology and science, however, is far different from the manufacturing society of the previous two centuries.

The concept of post-industrial society emphasizes the centrality of theoretical knowledge as the axis around which new technology, economic growth and stratification of society is organized. It is based on services. Hence, it is a game between persons. What counts is not raw muscle power or energy but information. Knowledge and technology have become the central resources of the society. This society can be defined as quality of life as measured by the services and amenities—health, education, recreation and the arts—which are now deemed desirable and possible for everyone. Free time is hardly available because a man has so many things to enjoy. It is a communal society in which the social unit is the community rather than the individual.

The chief resource of the post-industrial society is knowledge and dominant figures are scientific personnel, i.e. scientists/research men, and social loci are universities/research institutes. There is a possibility of an enormous growth in the third sector: the non-profit areas outside of business and government which includes schools, hospitals, research institutes, voluntary and civic associations, and the like. In the post-industrial society, technical skill becomes the base of and education the mode of access to power. An increasing amount of coordination is needed and there is great need of regulations.

The methodologies of the post-industrial society are based on abstract theories like simulation, decision theory and systems analysis. Due to the future orientation of the society, forecasting has gained much importance.

The post-industrial society is also called knowledgeable society, information society, technotronic age or active society. USA has already stepped into the post-industrial society. In the next 30 to 50 years we may see its emergence in many more countries.

The Plutonium Threat

Plutonium is one of the most lethal man-made substances. A speck of it can cause cancer.

Only 5 kg of plutonium was required to make the atomic bomb which devastated the Japanese city of Nagasaki in 1945. Compared to this the amount of plutonium (250,000 kg or 250 tonnes) that will be moving between power stations and reprocessing plants by the turn of the century seems alarming to critics of nuclear fission.

"This is really a horrifying amount of plutonium to be produced annually," said Dr Frank Barnaby, Director of the Stockholm International Peace Research Institute (SIPRI), a leading international authority on disarmament.

According to SIPRI estimates, by A.D. 2000 more than 500 nuclear power stations in 30-40 countries will be generating about 600,000 MW of electricity, giving reprocessing plants 250,000 kg of plutonium from irradiated uranium fuel rods. SIPRI argues that till now the nuclear weapon powers together have produced only 100,000 kg of plutonium. Thus, we are faced with the problem of two and a half times this amount being produced every year after A.D. 2000.

Dr Barnaby is of opinion that transportation of plutonium between power stations and reprocessing plants will cause unprecedented logistical problems. Moreover, he thinks, industrial societies might have to evolve powerful central authorities to cope with the latent threat to health and environment. Then there is the risk of the theft of plutonium by terrorists. Apart from these, the danger of weapon proliferation alone, Dr Barnaby feels, should encourage political leaders to pass through the nuclear fission period as quickly as possible.

INDUSTRY PROFILES

TOLUENE

Toluene, also known as toluol, methyl benzene and methyl benzol, is of considerable importance in the synthesis of saccharin, drugs, pharmaceuticals, and dyestuff intermediates. It is used as an industrial solvent for alkaloids, cellulose, esters, dopes, enamels, lacquers, varnishes, resins, rosin and waxes. It also finds use in the extraction of animal and vegetable fats and oils and degreasing bone and hair. Toluene is used as a gasoline component in admixture with other hydrocarbons and as a solvent in the pure state, particularly in the field of nitrocellulose.

Present Position

Some of the toluene manufacturing units in India are: Bengal Chemical & Pharmaceutical Works Ltd, Indian Iron & Steel Co Ltd (both in Calcutta); Chemco Fine Chemicals, Chemical & Allied Industries, Synthetics & Chemicals Ltd, Tata Iron & Steel Co Ltd, Union Carbide India Ltd (all in Bombay); Madhuram Textiles, N.K. Patel & Co (both in Ahmedabad); Hindustan Steel Ltd (Bhilai and Sindri); Fertilizer Corporation of India Ltd (Head Office, New Delhi); Krishna Chemical & Plastic Works, Delhi.

Capacity and production—Petroleum and coke oven by-products are the two toluene sources. It can be obtained from several petroleum or petrochemical processes such as reforming, hydrocracking, steamcracking and catalytic cracking. Table 1 and 2 give installed capacities for toluene from coke oven plants and naphtha and naphtha/gas respectively.

Production figures of toluene from both sources are given in Table 3.

TABLE 1—INSTALLED CAPACITY FOR TOLUENE FROM COKE OVEN PLANTS

Unit	Installed capacity (tonnes/yr)
1. Hindustan Steel Ltd	
(a) Rourkela Steel Plant	1,350
(b) Bhilai Steel Plant	3,350
(c) Durgapur Steel Plant	1,100
2. Tata Iron & Steel Co. Ltd	850
3. Indian Iron & Steel Co. Ltd	300
4. Fertilizer Corpn of India (Sindri unit)	250
5. Bokaro Steel Plant	To be installed
Total	7,200

TABLE 2—INSTALLED CAPACITY FOR TOLUENE FROM NAPHTHA AND NAPHTHA/GAS

Unit	Installed capacity (tonnes/yr)
1. Indian Oil Corpn Ltd	14,500
2. Union Carbide India Ltd	1,500
3. Gujarat Industrial Investment Corpn (from naphtha/gas)	14,000*

*Licensed capacity

TABLE 3—PRODUCTION OF TOLUENE

	(In tonnes)
1975	13,407
1976	18,432
1977	19,522
1978	23,830
1979	23,500

Demand—The estimated demand for toluene, taking into account its end uses in India, is given in Table 4.

TABLE 4—FORECAST OF DEMAND FOR TOLUENE

	(In thousand tonnes)		
	1978	1983	1988
Toluene di-isocyanate	—	7.5	10.5
Explosives	11.0	15.4	19.8
Dyes	—	—	—
Phenol	—	4.0	12.0

Trade—At present, toluene is not exported from India. Import figures of toluene for 1975/76-1978/79 are given in Table 5 [*Econ. Scene*, 1980, 5(5), 69; Indian chem. Directory—11th edn, Technical Press Publication, Bombay].

TABLE 5—IMPORT OF TOLUENE

(Qty in tonnes; val. in Rs lakhs)

	Qty	Val.
1975-76	4	30,795*
1976-77	60	1.9
1977-78	83.7	7.7
1978-79	84.0	8.0

*In Rs.

BREAD INDUSTRY

Bread is a basic and staple food for millions, yet there are problems of its availability and of its quality. Manufacture of bread, the most important segment of the bakery industry, is at present neglected in India and its growth is almost stagnant.

Present Position

Bread, in India, is manufactured by large, medium and small scale units. However, there are no official data available about the share of the various sectors in the manufacture of bread. In 1978, there were 19 units in the organized sector. Position of the unorganized sector is not known. It is estimated that there are about 15 to 20 thousand small bakery units in the country. These units produce bread loaves of different sizes to meet the purchasing power of the low-income people.]

Capacity and production—In 1972, the installed capacity of bread industry in the organized sector was 78,000 tonnes which rose to 90,000 tonnes by 1978. The annual growth rate in capacity was over 2%. The capacity utilization improved from 88.7% in 1972 to 105.6% in 1978.

During 1972-78, total production of bread in the organized sector expanded from 69,000 tonnes to 95,000 tonnes. The average production/unit was 5,000 tonnes. Thus, the rate of growth was about 5% per annum. From 1978 to 1979 production of bread registered an increase of 10.5%, which may be attributed to better offtake by consumers and improvement in quality and availability.

Production of bread in the organized sector during 1974-78 is given in the Table.

TABLE—INSTALLED CAPACITY, CAPACITY UTILIZATION AND PRODUCTION OF BREAD IN THE ORGANIZED SECTOR

	Installed capacity (In tonnes)	Capacity utilization (%)	Production (In tonnes)
1974	81,300	99.1	80,600
1975	81,300	104.6	85,000
1976	83,200	98.3	81,800
[1977	83,200	103.7	86,300
1978	90,000	105.6	95,000]

The average production in the unorganized sector is 200 tonnes of bread/yr. Assuming that there are 20,000 units, the total production in the unorganized sector may be about 40 lakh tonnes.

Demand—There is an enormous demand of bread in the country, due to growth in population and rising per capita income. The demand for the bread manufactured in the organized sector is rising at the rate of 5% per year.

The future of bakery industry is dependent on modernization, which is necessary for both improvement in quality of products and keeping costs down [Industr. Times, 1980, 22(7), 4; Report, 1979-80, Ministry of Industry, 43].

INDUSTRIAL NEWS

GENERAL

Energy Plan

The Planning Commission has outlined a six-point energy strategy for the Sixth Plan, the main feature of which will be less reliance on oil in view of the fluctuation in its price in the international market. According to the strategy, a programme is to be drawn up for maximum exploitation of coal and India's extensive hydro potential. The development of nuclear power scheme is also to be pursued with vigour.

To economise on the use of diesel and kerosene, biogas plants are proposed to be set up in the rural areas and biogas and energy plantations are to be resorted under intensive forestry development programme using wasteland and appropriate timber species.

As there is an ample scope for conservation of energy in several industrial processes, an energy audit is likely to be made in every major industrial undertaking both in the private and public sectors.

Research programmes will also be taken up on the development of renewable sources of energy. The use of solar energy is proposed to receive greater attention. The objective is to develop the use of solar energy by the end of the decade for irrigation.

According to the Commission, every effort will be made to develop coal and its output—now at 10.4 crore tonnes. The installed generating capacity of power plants is envisaged to go up by 20,000 MW and for this purpose super thermal plants are to be set up in the central sector. Regional grids will be strengthened and welded into a national grid so as to secure optimum utilization of available power.

Investments in transmission and distribution schemes will be given top priority and transmission losses will be reduced (*Tribune*, 29.8.80).

Tiny Sector

The government proposes to set apart a proportion of the total credit extended by banking system for the tiny and cottage sectors. This apportionment of credit is proposed in order to prevent the maldistribution of credit and to ensure that these units are not starved of it. The credit will give the small, tiny and cottage units some holding power and will help to smoothen the production process (*E.T.*, 14.8.80).

Sickness in Small Scale Sector

For the past few weeks there have been a number of reports about the sickness in the small scale sector. The president of the Federation of Associations of Small Industries estimates that 60% of the small scale units are sick, while the banks have come forth with a figure of 20,700 as sick units in this sector. Since

bank financing covers only a small percentage of the sector, the figure given out by the banks do not reflect the magnitude of sickness in the sector as a whole.

In Kerala as many as 8,000 of the 12,000 registered small scale units are reported sick. The picture in other States may not be as bad, but there is bound to be high mortality rate (F.E., 13.8.80).

ENGINEERING INDUSTRY

Toroidal Coil Winding Machine

The Central Electronics Engineering Research Institute, Pilani, has developed the know-how for a toroidal coil winding machine. Some of the applications for toroidal coils in electrical and electronic industries are in current transformers, differential transformers, and sensing transformers.

Since the toroidal core is a continuous magnetic material, winding a coil over a toroidal core differs significantly from normal coil winding on E/I or U cores, which are generally used for chokes, audio and power transformers.

Equipment needed for fabricating the machine are lathe, milling machine, bench drill, bench grinder, power hacksaw, hand tools, measuring tools, etc. The raw materials required include mild steel, iron casting, brass bushing, Teflon gearing, FHP motor, counter, etc. Both the equipment and raw materials required are available indigenously.

The know-how (Process No. 839.11.9) is available with the National Research Development Corporation of India, New Delhi 110 024.

TV Glass Shells Unit

A Rs 25-crore capital intensive TV glass shells factory with a capacity to produce 10 lakh pieces would go on stream by the end of 1981. At present these shells are being imported. The project, which is to be located at Taloja, adjacent to Panvel in Kolaba district, would be operated by the Bharat Electronics. The plant would depend for its energy supply on Bombay High gas.

If the Union Information and Broadcasting Ministry is able to get a consent from the Centre for its colour TV scheme, then the capital outlay of the glass shells factory is expected to reach the level of Rs 35 crores in none too distant future. The plant would manufacture black and white TV glass shells to begin with and subsequently it would switch over to the coloured products of the expected size and quality.

With the establishment of the plant at Taloja, India would have achieved hundred per cent indigenous production capacity for becoming fully self-reliant in the production of tubes, peripherals and glass shells. However, the country would have to look for advanced technology of the West, only if the government decides to opt for colour TVs even though on selective basis (E.T., 28.6.80).

Multichannel Electronic Tuner

The Central Electronics Engineering Research Institute, Pilani, has developed the design of electronic tuners for TV receivers.

The raw materials and components required are: transistors, varactors, switching diodes, VHF trimmers, feed-through capacitors, coils, IF transformers and glass-copper clad laminates. Of the equipment required, oscilloscopes, multimeters, power supplies, and VHF signal generators are indigenously available but VHF sweep generators, VHF deflectors and noise figure meters will have to be imported.

For manufacturing 5,000 units of these tuners/yr a fixed capital (excluding land and building) of Rs 1.75 lakhs and a working capital of Rs 2.00 lakhs would be needed.

Further particulars regarding the process (Process No. 840.11.9) can be had from: Managing Director, National Research Development Corporation of India, New Delhi 110024.

Special Purpose Machine

Kingsbury Machine Tool Corporation, USA, has manufactured a special purpose machine for metal parts machining/assembling systems. The machine may be designed as rotary or line index machine. In either configuration it will drill, mill, ream, tap, bore or assemble - all in a single system. It can be designed to process large parts or small parts or a family of parts, and machine them precisely and continuously in enormous quantities with a single operator. It is most often used for high volume production of small parts with relatively few machining operations.

For further information write to: Seaton Sales, 5 Kingston Road, Richmond Town, Bangalore, Karnataka-560025 [Industr. Prod. Finder, 1980, 8(6), 35].

Magnetic Crack Detector

Toshniwal Electroflux Magnetic Crack Detector employs magnetic particle inspection for non-destructive testing of ferro-magnetic materials.

It checks surface and sub-surface cracks in bar stock, castings, piping, forgings, machined parts and weldments. Applications are in steel mills, foundries, forge shops, shipyards, aircraft industry, railroad workshops and machine shops.

The compact unit includes a welded steel frame head stock with clamping arrangements and complete circulating system for magnetic fluid.

It is available in different ranges from 500 to 10,000 amp. A.C. and half-wave D.C. in stationary and portable wet and dry models.

For more details contact: Toshniwal Bros Pvt. Ltd, 3E/8 Jhandewalan Extension, New Delhi 110055 (E.T., 28.7.80).

CHEMICAL INDUSTRY

Polish Technology

Poland has developed new technologies to produce phosphoric acid, urea, dimethyl terephthalate (DMT), nicotinic acid and amide, and silicone oils. The phosphoric acid process involves combustion of yellow phosphorus to produce the oxide P_4O_{10} which is absorbed in circulating phosphoric acid. The process yields phosphoric acid of minimum 75% purity and has been tested at 15,000 and 50,000 tonnes plants. In the urea process, liquid ammonia is reacted with carbon dioxide in a recycle stream to yield a mixture of urea, ammonia carbamate, unreacted ammonia and carbon dioxide. The latter products are removed by heating and evaporation, resulting in 78-80% pure urea.

Prosynchem, a chemical synthesis research unit, and Blachownia, a research institute of heavy organic synthesis, have jointly developed a DMT process which cuts production costs and uses para-xylene and para-methyl toluate as feedstocks. Poland has tested the process at 75,000 tonnes/yr Chemitex-Elana plant at Torun and will build another similar-sized plant. The nicotinic acid (niacin) and amide (niacinamide) process developed at the Warsaw's Institute of Industrial Chemistry is based on the catalytic oxidation of beta-picoline to 3-cyanopyridine, followed by hydrolysis in the presence of ammonia and heating. Katowice University has developed a process for the chlorination of methyl-silicone oils and their stabilization by using aliphatic epoxides [*Tech. Surv. (Predicasts, USA)*, 1980, 36(17), 3].

Phthalic Anhydride

As the PVC plant of Indian Petrochemicals Ltd is likely to become operational next year and an expansion of production base for dyes, plasticisers, etc. is expected, a 50% demand for phthalic anhydride is on the cards.

At present, however, the 5 existing plants manufacturing phthalic anhydride are burdened with surplus capacity. Also, a new plant with an installed capacity of 6,000 tonnes/yr is in an advanced stage of implementation.

Against the annual indigenous production of 30,000 tonnes, the demand for phthalic anhydride is about 24,000 tonnes. As the domestic units have per force to use imported ortho-xylene to the extent of two-thirds of their requirement whose international f.o.b. price is now around \$ 600/tonne (against \$ 297/tonne in October 1978), the cost of indigenous phthalic anhydride has gone up. Moreover, imported ortho-xylene invites customs duty of 40%, surcharge of 5% and a countervailing duty.

Under the above situation, manufacturers have suggested to the government that phthalic anhydride be put on the absolute banned list and they be allowed to import ortho-xylene duty free for the supply of phthalic anhydride at a lower price to manufacturers and exporters of dyes and other chemical products using this compound. The supply of phthalic anhydride at the reduced rate will only be to the extent the material is used for export production. In fact, the

manufacturers are recommending a two-tier price structure for phthalic anhydride [*Chem. Weekly*, 1980, 25(34), 66].

Fatty Alcohols Plant

Aegis (Chemicals Industries Ltd) is putting up India's first fatty alcohols plant for natural feedstock with a capacity of 5,000 tonnes at Julgaon, Maharashtra. The plant will be based on the know-how from Haldor Topsoe in collaboration with Sarhus Olie Fabrik AGS of Denmark. The plant is expected to go on stream in early 1981 and will produce a range of saturated and unsaturated alcohols from natural feedstock [*Indian chem. J.*, 1980, 14(11), 20].

Alcohol from Mahua Flowers

The Central Food Technological Research Institute, Mysore, has prepared a feasibility report on the manufacture of industrial alcohol from mahua (*Madhuca indica*) flowers of Gujarat.

The products that could be made from mahua flowers include potable alcohol, rectified spirit, baker's yeast, vinegar and concentrated sugar syrup. According to the report, the production of rectified spirit from mahua flowers will not be economical in comparison to that from molasses unless the raw material cost is brought down and the byproducts are gainfully utilized. While mahua flowers cost about Rs 600/tonne, molasses with the same sugar content costs only about Rs 60/tonne. To be economically viable, the minimum capacity of the plant for manufacturing rectified spirit from mahua flowers should be of 20,000 to 30,000 litres/day. Since the available quantum of flowers ranges between 1 and 1.5 lakh quintals, the suggested capacity of the manufacturing unit is 1 lakh quintals.

Adhesive

Hughson Chemicals (Eric, Pa) has developed 'Versilok' Series 200 High-Performance Acrylic Structural Adhesive for joining metal parts coated with oil or other anti-rust formulations through direct application without any need for degreasing, grit-blasting or other treatments. The Versilok package comes in 2 parts, an adhesive resin available in different monomer/reactive prepolymer blends for a full range of textures from thin fluids to heavy non-sagging pastes, and an activator [*Tech. Surv. (Predicasts, USA)*, 1980, 36(16), 5].

Phosphatic Fertilizer

The University of Warsaw's (Poland) new POLI process yields a dry, fine-grained, nonlumping phosphatic fertilizer without acidulating the phosphate rock in acid. Gases containing 5-12% sulphur trioxide are reacted with phosphate rock at 200-300°C to form the product, which is ready for use after cooling. POLI analyzes at 23-28% P_2O_5 , depending on the quality of the rock, up to 5% water and at most 0.2% free acids. The process uses 2.5% less sulphur than conventional

acidulation, forms no waste products and uses water only for cooling and off-gas scrubbing. Siam Chemicals Co. (Bangkok, Thailand) is testing the process at a 15 m tpd plant with the help of Polimex-Cekop; it hopes to expand capacity to 105 m tpd soon [*Tech. Sur. (Predicasts, USA)*, 1980, 36(13), 6].

MISCELLANEOUS INDUSTRIES

Diamond Export

Cut and polished diamonds are occupying a very important position in India's foreign trade. Their exports during 1978-79 were of the order of Rs 693 crores. The phenomenal growth in India's international trade in diamonds over the last 5 years is evidenced from the Table.

EXPORTS OF DIAMONDS

	(In Rs crores)
1974-75	77.97
1975-76	99.08
1976-77	211.84
1977-78	516.68
1978-79	693.00

With a view to ensuring additional supply of diamonds from indigenous sources, a scheme has been launched by the Government of India for intensive geological exploration over a number of areas in the country. The Hindustan Diamond Company is also functioning as a catalyst in the promotion and development of country's diamond trade and industry. The government has also started two training institutes—one at Surat and other at Jaipur—in order to raise the productivity and efficiency in the diamond cutting industry. The Gem and Jewellery Export Promotion Council has also planned to start an audio-visual programme of training for diamond cutters in the main diamond cutting centres.

As estimated by the task force for gem and jewellery, exports of gems and jewellery from India is expected to reach a figure of Rs 2,000 crores by 1982-83, and in this the share of diamonds has been placed at Rs 1,425 crores.

The demand for diamond tools on account of industrial application of diamond is also stated to be rising at the rate of 9% per year [*Econ. commerce News*, 1980, 10(32), 4].

Masonry Cement

According to a report prepared by the Central Building Research Institute, Roorkee, masonry cement could be produced from zinc tailings obtained during beneficiation of zinc ores.

The material possesses good workability, water retentivity and greater resistance to volume changes than portland cement-sand mixes, and its properties conform to the relevant Indian standard specification.

The cost estimates for cement production and the comparative cost data for other conventional mortars used in buildings have revealed that it is almost of the same cost as that of the other one.

Masonry cements are specially formulated inter-ground mixtures of portland cement clinker, limestone and an air entraining agent. They are considered superior to composite mortars in overall performance.

Masonry cements are generally used for cementing together masonry units like clay, bricks, concrete blocks and stones. The presence of materials like limestone, dolomite, waste lime sludges and blast furnace slag provides better volume stability to the hardened mortar and also helps in retarding the setting time, which means saving of some gypsum normally needed for set retardation.

The cost of production of zinc tailing masonry cement from a plant (cap. 20 tonnes/day) is estimated at Rs 222/tonne and selling price is placed at Rs 300/tonne.

Newsprint Making Process

The Swedish Wood Research Institute has developed a new process of newsprint manufacturing using fungus. The method requires less water, wood and energy.

The conventional method requires 25 cu. m. of water a minute to cleanse the pulp of waste matter. In the new process, the same water can be used again and again.

When the waste water is passed through a tank containing fungus, objects such as glue, salts and sugar in the water are absorbed by the fungus and the water cleaned for reuse.

The reproduction in water use cuts down environmental pollution and also reduce cost by up to Rs 40/tonne of newsprint. The fungus, after use, can be made into animal feed or mixed in the pulp for making paper and further reduce costs up to Rs 100/tonne (E.T., 21.7.80).

Neem Tree—A Boon to Industry and Agriculture

The Neem tree (*Azadirachta indica*), which thrives in poor soil, improves the soil by gathering nutrients through an extensive root system and then returning the nutrients to the top soil when it drops its leaves. It yields a non-toxic insect repellent, thiochrome, that protects crops planted near it and another component, azadirachtin, that disrupts the feeding and growth of a number of insects and could replace DDT. It contains an antiseptic oil that is suitable for heating and lighting, as a lubricant in its raw state, and as a component of medicated soaps, cosmetics, disinfectants and edible fats when refined. The seed cake is richer in nitrogen, potash, phosphorus, calcium and magnesium than manure, cattle or pig slurry and sewage sludge. The fruit pulp may be used as a

substrate in methane gas generation and as a base for other industrial fermentations. Extracts of the bark in toothpaste have proven highly effective in preventing and healing inflamed gums [*Tech. Surv. (Predicasts, USA)*, 1980, **36**(30), 2].

Hyacinths Used in Sewage Water Treatment

Hyacinth, an aquatic plant, is being used to treat sewage water in a Hercules, Calif, plant that produces 350,000 gal/day of almost pure water used by industry for cooling purposes and farmers for irrigation. The plant has proved very effective in absorbing heavy metals and other contaminants [*Tech. Surv. (Predicasts, USA)*, 1980, **36**(30), 20].

Flavoured Tea

The Central Food Technological Research Institute, Mysore, has developed a laboratory scale process for incorporating natural essential oils into tea. An important feature of the process is that the rich flavour notes of the essential oil blend smoothly with natural tea flavour. Rose, cardamom, ginger, bergamot, orange and lime flavoured tea beverages have been prepared and found acceptable. In view of the advances made by the Institute in the development of know-how for a variety of flavoured tea beverages, the Tea Board has recently sponsored a time-bound research project for upscaling the laboratory process for commercial use.

There is a great demand of flavoured tea in UK, West European countries and USA.

Mixer

Fobdecon Engineers, Bombay, have developed a mixer with different beaters of capacities from 15 to 600 litres. It is used for mixing liquid-liquid, liquid-solid, solid-solid combinations and can handle material of different specific gravity and viscosities. It can perform blending, kneading, emulsifying, cutting, grinding aerating and drying operations. Material used for construction are mild steel or stainless steel.

For further information write to: Fabdecon Engineers, 1/18 Tailas, Sainthnagar, Bombay 400086 [*Industr. Prod. Finder*, 1980, **8**(4), 23].

TRADE ENQUIRIES

*Fushioka & Co. Ltd, Central P.O. Box No. 478, Osaka, Japan. The firm desires to export PVC perforated and flexible corrugated sub-soil drainage pipes.

*GPK Trading Co. Ltd, Suite A, 11th floor, No. 15 Nsin-Vi Road, Sector 2, Taipei, Taiwan, R.O.C. The firm desires to export wooden furniture, toys, X'mas decoration and semi-precious stones and Taiwanese commodities.

*China Standard Merchandise Development, Inc., P.O. Box No. 70-154, Taipei, Taiwan, R.O.C. The firm desires to export bandage, disposable syringe and needles, surgical rubber gloves, stethoscope, blood pressure unit, combination operating lamp, high-pressure sterilizer/autoclave, operative table and hospital bed, etc.

*Equatorial Supplies, Jurong Town, Post Office Box 255, Singapore 9161. The firm desires to export motor cycle and car spare parts, all kinds of electronic/electrical components/parts and diesel engines, etc.

*Chuan Lee Printing Press, Sdn BHD, 14, Presgrave Street, Ghaut, Penang. The firm desires to export H/M singlet style plastic shopping bags.

*Bahurupi International, 209, Newabpur Road, (1st floor) Dacca-1, Bangladesh. The firm desires to import dyes and chemicals, scientific instruments, iron and steel materials, books, lathe machine, ruston diesel engine, all sorts of machinery, electrical equipment, parts and accessories of automotive vehicles, cycle parts, tools and workshop equipment, rice, flour and oil mill machinery and spare parts, jute and textile mill spare parts.

*Modern Office Machine, 71, Purana Paltan Super Market, 1st floor, G.P.O. Box No. 956, Dacca-7, Bangladesh. The firm desires to import plain paper copiers, typewriters, duplicators, calculators, stencil cutting machines, etc.

*Mehdi Djamalian Esfahni, Ave Sepah, Corner of Shekhadi Avenue, Bldg Lolawar, 3rd floor, Block No. 9, Tehran, Iran. The firm desires to import all kinds of chemicals for paints, rubber and leather gloves, all kinds of resins, all kinds of pigments, linseed oil paint and plastic paints.

*Mohajer Trading Co., 1st floor, Building 62, Ostad Nejatollahi Street, Tehran, Iran. The firm desires to import water pipes, taps, sinks, showers and kitchen fixtures.

*Shubbar Perfumes & Cosmetics Products Co. (WLL), Shorja, Bahbahani Building, Baghdad, Iraq. The firm desires to import raw materials for shampoo, raw materials for different sorts of perfumes, raw materials for nail polish, coconut oil, almond oil, and self-adhesive paper and coated board.

*Abdulla Fadul Est. Metal Industry, CR 10443, P.O. Box No. 4161, Jedda, Saudi Arabia. The firm desires to import non-ferrous metals, bakelite and plastic handles of standard sizes, heating elements for kettles, and other electrical requirements.

*J. Gilibert S.A., Faramans, 38260-La Cotesaint, Andre, France. The firm desires to enter into technical collaboration in the field of agricultural trailers.

*Visa J. Olalowo (Nig) Enterprises, 40, Idoluwo Street, G.P.O. Box No. 4594, Lagos, Nigeria. The firm desires to import building materials, cutlery goods, handtools, electrical goods, leather belts, watch straps, hats and caps, T-shirts, readymade wears, knitted wears, etc.

*Simex, 206 Rue de Saint-Malo, 3500 Rennes, France. The firm desires to locate an agent in India to sell equipment for industry and agriculture, food products, etc.

*Georges Petitjean, 13 Place Jean Mace, 69007 Lyon, France. The firm desires to export chemical products for pharmaceuticals, small agricultural machinery and hydraulic cranes.

*Societe Europeene de Malange, 70 Ave Dumotel, B.P. N 3, 94230, Cachan, France. The firm desires to export agitators for mixing operations, and technology for water treatment, petrol and petrochemical industries, chemical and pharmaceuticals industries, and treatment of minerals.

*R. Husson & Cie, 16 Rue Charles De Gaulle, B.P. N 8, 68370 Obrey, France. The firm desires to provide technical know-how for precast concrete and prefabrication.

*Lolavar London, P.O. Box 312 SE3 7TF, 2 Pineland Close, St. John's Park, London, England. The firm desires to import mortice locksets, brass padlocks, hinges, door and furniture, screws for metal and wood, and cylinder drawback rim lock.

*Commercial Zvelt United, P.O. Box No. 2303, Santo Domingo, Dominican Rep. The firm desires to import PVC tumblers, glassware, goblets and decorated glassware.

*Syndicated Consultants, 1217, Washington Street, Suite 23E, P.O. Box 393, Uptown, Hoboken, N.J. 07030, USA. The firm desires to export rice, wheat, corn, sugar, frozen chicken, frozen turkey, flour, corned beef (canned), evaporated milk (canned), tomato paste (canned), cigarettes, fertilizers, poultry feed concentrates, agrochemicals, cement, home appliances, auto tyres and tubes, industrial raw materials, cosmetics, chemicals, petrol tank trucks and beer raw materials.

*Overseas Marketing Group, Inc., P.O. Box No. 39122, Solon, Ohio 44139, USA. The firm wishes to establish mutually profitable working arrangements with export-import firms in India.

*Eric J. Landsberg Export Import Co., P.O. Box 563, Lenox Hill Station, New York, N.Y. 10021. The firm desires to contact import/export agents dealing in tools, clothes and sundries.

*Ahmad Adam & Sons, 133, Avenue Kashew, 3rd Floor, Room No. 10, Tehran, Iran. The firm desires to import pipe fitting, bath room sanitary fittings, electrical products, tailor scissors, black tea, gas mantel, chimney blow lamp, pencil papers, spray guns, special frame equipment, grass cutting machine (agricultural), handtools, shoe leather, bed sheets, kitchen ware kitchen tools, sewing machine, electrical motor for sewing machine, woollen cloth, gas cooker, freezer refrigerator, washing machine, automobile and spares.

ANNOUNCEMENTS

AWARDS

Chemical Engineering Awards

Nominations are invited for the following annual (1980) awards of the Indian Institute of Chemical Engineers (I.I.Ch.E.) for meritorious work in the field of Chemical Engineering to be presented in December.

1. Lala Shriram National Award for leadership in chemical industry (Rs 9,000).
2. Hindustan Lever Award for most outstanding chemical engineer of the year (Age below 45 years, Rs 4,500).
3. Indian Explosives Award for excellence in process or product development (Rs 4,500).
4. Herdillia Award for excellence in basic research in chemical engineering (Rs 4,500).
5. NOCIL Award for excellence in design or development of process plant and equipment (Rs 4,500).
6. Amar Dye-Chem Award for excellence in research and development in chemical engineering (Age below 35 years, Rs 2,500).
7. Ambrose Congreve (Humphreys & Glasgow) Award for chemical engineer of the year (Rs 8,000 and a gold medal).

Rules and nomination forms can be obtained from: Hony Secretary, I.I.Ch.E., Dr H.L. Roy Building, Raja Subodh Mullick Road, Post Box No. 17001, Calcutta 700032.

Coal Scientist Award

Shri B.K. Mazumdar, Deputy Director, Central Fuel Research Institute, Dhanbad, has been named by a National Committee for the Senior Coal Scientist Award for 1979 newly instituted by the Ministry of Energy and Coal, Govt of India.

The Senior and Junior Awards consist of a medal each plus Rs 5,000 and Rs 3,000 cash respectively, and is open to all Indian research and development scientists and technologists. The Junior Award is for the age group below 35.

CONFERENCE & SYMPOSIUM

International Conference of Women Entrepreneurs

The first International Conference of Women Entrepreneurs will be held at Vigyan Bhavan, New Delhi, on 13 November, 1980, on the occasion of the World Assembly of Small & Medium Enterprises [see *Industr. News Digest*, 1980, 3(8), 16]. Invitations have been extended to 110 countries besides all the states of India. The Central Social Welfare Board has been requested to collaborate.

Symposium on Beneficiation and Agglomeration of Minerals

The International Symposium on Recent Advances in Beneficiation and Agglomeration of Minerals will be held at Bhubaneswar from 7 to 9 January,

1981. It is being jointly organized by the Indian Institute of Metals and the Regional Research Laboratory (both at Bhubaneswar).

EXHIBITIONS

Arab Build '80

An exhibition covering building materials, housing systems, construction machinery and public works will be held in Bahrain from 9 to 14 November, 1980.

For further details interested parties may contact: Consilium Private Ltd, World Trade Centre Project Office, Cuffe Parade, Colaba, Bombay 400005, Tele: 212351 and 230248, Telegram: CONSILIUM.

Warsaw Exhibition

Warsaw Exhibition will be held from 12 to 14 November, 1980 in Poland.

Range of products include: metal and plastic mechanical toys, non-mechanical metal, plastic and rubber toys, wooden toys, toys of cloth and felt, dolls of all kinds, pedal and motor-cars for children, prams, push-chair, baby-walkers, cots and high chairs, educational aids, scientific toys, games of skill, constructional sets, infant's clothing and underwear, napkins, bed line furniture, baby foodstuffs, maternity products and equipment for toys' manufacturers.

For further details contact: Information Centre of Poland, 12-A Mahatama Gandhi Marg, New Delhi 110024.

Machine Tool Exhibition

Machine Tool Exhibition will be held at I.I.T. Kanpur from 10 to 13 December, 1980 to coincide with the Ninth AIMTDR Conference. The conference will be attended by 400 delegates from all over India and foreign countries. The exhibition will be first of its kind to be organized at Kanpur. It will provide a rare opportunity for machine tool manufacturers to exhibit their products for the benefit of a large number of user industries in northern region.

For further details contact: Organizing Secretary, Indian Institute of Technology, Kanpur 208016.

RESEARCH AND TRAINING CENTRE

A Research and Training Centre has been established in Australia to investigate alternative energy sources and develop self-sufficient technologies.

A group known as Appropriate Technology and Community Environment (APACE) has acquired a 120-ha property at Ratherwood, between Bathurst and Orange, 185 km west of Sydney and started work on the first stages of the centre.

The group plans to build research laboratories, workshops, a conference hall and hostel accommodation and establish a self-sufficient community, relying almost entirely on its own renewable resources. The only service from the outside will be the telephone.

During weekdays the centre would carry out research into alternative energy sources, intensive organic food production and other forms of technology. At weekends it would be open to the public for demonstrations and exhibitions.

One of the main research projects at the centre will be on wind power. There will be two windmill systems, which will be combined with a photo-voltaic system.

PUBLICATIONS

Guidelines for Industries 1979-80 Part II; Indian Investment Centre (IIC), New Delhi. Price Rs 35.

The Guidelines contains detailed profiles of over 200 industries.

Copies are available from IIC Office, (at Sansad Marg, New Delhi; 10-A, Nyaya Marg, Allahabad; Malviya Nagar, Bhopal; 19 Netaji Subhas Marg, Calcutta; SCO 90-91, Sector 17C, Chandigarh; and 48 Anna Salai, Madras, leading booksellers and at the Ministry of Industry Sales Counter, Udyog Bhavan, New Delhi.

Industrial Paint Application: Second Edition by W.H. Tatton and E.W. Drew; Newnes-Butterworths of UK. pp. 266. Price Rs 191.25 + forwarding charges Rs 7 (The book is available from the Business Press Pvt Ltd, Technical Books Division, Surya Mahal, 2nd Floor, 5 Burjorji Bharucha Marg, Fort, Bombay 400023).

This edition is an attempt on the part of the authors to update their original work. Included in it are separate chapters on electrodeposition and powder coating, as well as a chapter on special techniques including ultraviolet and electron beam curing. Other chapters on various application techniques and the chapter on paint technology have been amended and brought up-to-date.

Small Industries and the Developing Economy in India by R.V. Rao; Concept, New Delhi.

In this publication the author discusses the definition and importance of small industries as also the development of ideas on the subject. In spite of the wide publicity given to promotion of small industries, the book brings out the fact that precious little has been actually done to help them.

The author also devotes his attention to khadi and village industries. He notes that of the many cottage industries, hand spinning and weaving are the most important. A few pages have been devoted to an account of the activities of the Khadi and Village Industries Commission.

Finance is the *sine qua non* for industrial prosperity and he rightly observes that small industries suffer from a dearth of it. Existing agencies like the State Financial Corporation, schemes of the State Bank of India and the Reserve Bank of India have failed to fully cater to the financial requirements of these industries. True, industrial co-operatives have been established. But their functioning in this and other respects leaves much to be desired [*Econ. Scene*, 1980, 5(5), 40].

INDUSTRIAL NEWS DIGEST

Volume 3 Number 11 November 1980

CONTENTS

Editor: S.K. Nag

Asst. Editor: M.M.S. Karki

Ed. Asst.: Madhu Bala

Published by the Publications &
Information Directorate, CSIR

Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

Miscellany 1-2

Industry Profile

Fibreglass Industry 3-5

Industrial News

Industrial production, Trade drain, Export potential of small industries, Hydel power 6-7

Fuel cells, Variation meter, Solar drier, Rotary engine, Solar panel, Fast thermometer, Facit decitab 8-9

Production of chemicals, Chemicals exports, Beta-naphthol plant, Water-based paint, CMS, New resorcinol route, Know-how for resins, Dimethyl aniline process, Butanol 9-12

Cement industry, Paper boards, Protein-producing bacterium, Cheaper wool printing 12-13

Trade Enquiries 14-15

Announcements

Awards; Conference & Seminars; Technology from Abroad; Publications 16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate (CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

How Not to Run an R&D Organization

An ostensibly funny article in the May 1980 issue of *Chemtech* provides the know-how for destroying the technical competence of an R&D organization through (mis)management.

Wrong job assignment is the best way to introduce obsolescence in a technologist. This can be done by the R&D manager in several ways. Some of them are: (i) making a technologist involved in a project to the extent that he comes to believe that the project is more important than acquiring any further knowledge in his line of technology; (ii) to shelve the technologist, i.e. to put him continually in routine jobs whereby he is isolated from challenging, advanced technology and gets no opportunity to increase his skills; and (iii) under the pretext of checking stagnation and increasing mobility within the organization, move the technologist so often from job to job that he never gets the satisfaction of finishing anything or developing deeper technical knowledge about anything.

Nothing puts so effective a halt on creativity as lack of reward. Therefore, if the manager withholds reward in the shape of money, challenging work, influence on technical decisions, comfortable working conditions and/or organizational recognition from the technologist, the latter is bound to get demotivated and stop giving his heart and soul to his work and bringing out his best. Unrewarded activities, as someone said, have a way of eliminating themselves.

These and many other ways of stifling creativity and encouraging obsolescence are brought out in the article. Although it is written with American R&D organizations in mind, the article also has quite some relevance to their Indian counterparts. Anyway, what is important is that the authors—experts in management and organizational behaviour—have neither tried to be merely funny nor have they attempted to humiliate R&D managers out of sheer malice. According to them, some R&D managers in USA are inadvertently practising the same methods the authors have prescribed for destroying an R&D organization. This is largely because these managers do not realise that what is good for R&D management in one decade may be quite the opposite in another. So, they are innocently following the policies and procedures that worked well during the technology boom of the '50s and '60s and, as a result, are running their organizations to the ground in the changed technological milieu of the '80s. The authors have given some guidelines to managers for avoiding the pitfalls and ultimately putting technical vitality in their organizations. But that is another story.

Future Airline Fuel

There is a strong probability that petroleum-based jet fuel will not be available at acceptable cost in many part of the world by the year 2000. Search, therefore, is on for an alternative fuel for advanced commercial aircrafts entering service in the 1990s.

The 3 most attractive candidates to fill the role of an alternative fuel are synthetic jet fuel, methane and liquid hydrogen. Based on the data from a series of studies made by various organizations, G. Daniel Brewer, Manager of Hydrogen Studies, Lockheed Corporation, USA, has endorsed hydrogen as the most promising candidate.

According to A.V. Cleaver, Director and General Manager, Rockets Division, Rolls Royce, if the aircrafts of tomorrow were subsonic, with the hydrogen fuel they would be able to fly from Britain to Australia non-stop. If they were hypersonic, they could fly at 7 times the speed of sound at extreme altitudes.

Of late, Lockheed has come up with a proposal which could bridge the existing gap between theory and practice as far as hydrogen as an aviation fuel is concerned. Stimulus for the proposal, which calls for the USA, UK, West Germany and Saudi Arabia to build and operate a fleet of liquid hydrogen powered freighter planes as an experiment, is the worsening fuel shortage.

Liquid hydrogen is pollution free and more energetic than either synthetic jet fuel or methane. Its energy content/kg is 2.8 times greater than hydrocarbon fuels. However, its energy content by volume is only 25% that of hydrocarbon fuels.

One of the most important benefits of using liquid hydrogen results from the performance advantages it provides for aircrafts designed to use it. Because of its high energy yield, a subsonic airplane designed to use it would be smaller physically and weigh 34% less than its synthetic-fuelled counterpart. Because of the reduced weight, the aircraft would require less energy, operate with smaller engines and could use shorter runways. It would also be 3 to 5 decibels quieter.

Liquid hydrogen's principal disadvantages are: (i) it requires vacuum-jacketed containers and transfer lines to stores, which in turn require the development of new, efficient insulation materials and metals, and (ii) it must be transported and contained at very cold (cryogenic) temperatures. However, its many advantages outweigh its minus points and make it the most attractive of the 3 candidates. Thus, presently used to propel space rockets, liquid hydrogen may drive the civil aircrafts of the future. If Lockheed's proposal is approved, the first liquid-hydrogen fuelled aircraft could be flying by mid 1984 and carrying freight by 1986.

INDUSTRY PROFILE

FIBREGLASS INDUSTRY

Fibreglass is glass in fibrous form. It finds application in a number of areas such as electrical insulation, reinforced-paper rubber and thermoplastics and protective screens. It can also replace asbestos fibre and asbestos cement products. The most important use of fibreglass is in making fibre glass reinforced plastics. Fibreglass is used world-wide in aircraft and aero-space industries, marine, construction, transportation, and chemical and engineering industries where corrosion is a problem.

Raw Materials

The raw materials required for the manufacture of fibreglass are silica sand, china clay, limestone, dolomite, flourspar, boric acid and certain other chemicals. All the materials are available indigenously.

Capacity

Till 1978 there was only one unit, Fibreglass Pilkington Ltd, Bombay, in the organized sector manufacturing fibreglass with a licensed capacity of 1,000 tonnes/yr. Since 1965, this unit in technical collaboration with Fibreglass Ltd (UK) has been producing continuous filament fibreglass yarn, glass wool and glass tissues. From early 1979 another fibreglass unit, Twiga Fibreglass Ltd, set up at Sikandrabad (Bulandshahr) has gone into production. This unit having a licensed capacity of 2,000 tonnes/yr (costing Rs 990 lakhs) has been established in the joint sector by some overseas Indian promoters in association with the Pradeshia Industrial and Investment Corp'n of UP (PICUP) and UP State Industrial Development Corp'n (UPSIDC). In technical collaboration with Reichhold Chemicals Inc., USA, this unit has enabled 27 small and medium scale units to come up and turn out various products from fibreglass in conjunction with other raw materials like plastics, textiles, etc. Another 18 units are expected to come up during the current year and in 1981-82.

A pilot plant of 1.2 kg/hr capacity is in operation at the Central Glass & Ceramics Research Institute (CGCRI), Calcutta. The raw material used is neutral glass rod which is available indigenously. For a 100 kg/day plant, the cost of production has been worked out by CGCRI at Rs 20/kg.

Another fibreglass unit, Deccan Fibre Glass Ltd, set up in the backward district of Mehboobnagar (32 km from Hyderabad) is expected to go on stream by the end of 1980. The Project costing Rs 10.97 crores is jointly promoted by the Andhra Pradesh Industrial Development Corp'n Ltd and Phillips Carbon Black Ltd. Nittobo Seki Ltd, Japan, would give technical and process know-how and assist in the procurement of machinery and equipment from Indian and foreign sources. The unit has been given a licence for 4,000 tonnes/yr, but initially it will have a capacity to produce only 2,000 tonnes.

Besides the above, an additional capacity of 35,800 tonnes/yr has been approved.

Production

Production figure for fibreglass during the last 5 years is given in Table 1. There has been more than two-fold increase in production from 1975 to 1979.

TABLE 1—PRODUCTION OF FIBREGLASS
(In tonnes)

	1975	426.00
	1976	844.23
	1977	850.00
	1978	640.00
Estimated.	1979	1000.00

Demand

The demand for fibreglass has been estimated by DGTD as 15,000 tonnes/yr by 1982-83 at international prices. According to the estimates recently made by the National Industrial Development Corpn, New Delhi, the demand for fibreglass would be about 34,500 tonnes within the next 5 years. Since adequate capacity has already been approved, there is no scope for approving further capacity at this stage.

Technology

As stated earlier, CGCRI has for the first time developed a technology, suitable to small scale sector, for the production of fibreglass with an investment of only a few lakhs of rupees. Till now, only large scale units were manufacturing fibreglass with foreign collaboration and heavy investment.

Exports and Imports

Export and import figures for fibreglass for the years 1974/75-1978/79 are given in Table 2. It is exported mainly to Afghanistan, Canada, Dubai, Kuwait, Malaysia, Nepal, Singapore, UK, USA, Iran, Iraq, West Germany, Sri Lanka and France.

TABLE 2—EXPORT AND IMPORT OF FIBREGLASS
(Qty in tonnes; val. in Rs lakhs)

	Exports		Imports	
	Qty	Val.	Qty	Val.
1974-75	28.8	3.02	42.2	17.45
1975-76	32.9	3.43	49.9	25.56
1976-77	20.9	3.76	39.7	14.09
1977-78	196.6	29.86	431.2	64.20
1978-79			219.4	76.8

Fibreglass is imported from West Germany, Italy, Sweden, Switzerland, UK, USA, USSR, Japan, Netherlands, Czechoslovakia, Singapore, France, Belgium and Canada [*Chem Ind News*, 1977, **23**(9), 646; *Chem Take-off*, 1978, **8**(3), 6; *Industr News Digest*, 1978, **1**(1), 26; 1979, **2**(7), 14 and 1979, **2**(11), 12; *Annu Rep, Minist Ind*, 1979-80, 106; *Guidelines for Industries*, 1978-79, Part II, 136; *Sendoc Bull—Ind and Tech*, 1980, **8**(6), 30; *Chem Weekly*, 1980, **25**(50), 53].

INDUSTRIAL NEWS

GENERAL

Industrial Production

Industrial production recorded a decline of 3.5% during the 1979-80 busy season (November-April) in contrast with the increase of 6.6% in the busy season of 1978-79. All the 3 sectors, viz. mining and quarrying, manufacturing, and electricity contributed to this decline.

In the mining and quarrying sector, the index registered a decline of 4.1% as against the increase of 5.1% in the previous busy season. The decline in the output of the manufacturing sector (3.4%) in contrast to a rise of 6.3% in the 1978-79 busy season was the result of a fall in production in a number of basic and consumer goods industries.

Electricity generation during the period declined by 4.0% in sharp contrast to a rise of 10.1% in the preceding busy season. This was mainly due to sizeable decline in hydroelectricity generation [*Reserve Bank India Bull*, 1980, 34(4), 192].

Trade Drain

According to provisional data, exports during 1979-80 were Rs 5,999 crores and imports amounted to Rs 8,213 crores. This has resulted in the doubling of the trade deficit to Rs 2,214 crores from a deficit of Rs 1,088 crores in 1978-79. While the import bill went up by about 25% due to steep increases in the prices of crude oil and other imports and due to the country's pursuance of a liberal import policy, exports increased by only about 8% as a result of several bottlenecks in the economy in sectors such as transport, power, coal and cement [*Econ Scene*, 1980, 5(8), 21].

Export Potential of Small Industries

Exports from small scale sector which were of the order of Rs 532 crores during 1975-76 increased to Rs 943 crores during 1978-79. It is estimated that during 1979-80, these exports have crossed the figure of Rs 1,000 crores. The share of small industry products in the total exports from the country increased from Rs 15.1% in 1975-76 to Rs 16.4% during 1978-79.

While in certain items like sports goods, processed tobacco, snuff and *bidis*, and woollen garments and knitwears small sector contributes 100% of the exports, its share in exports of certain non-traditional items like engineering goods, basic chemicals and drugs, and marine products is also quite substantial. A fair degree of modernization and sophistication achieved by the small sector in its products and processes as also reservation of a number of additional items for exclusive manufacture in the small sector have been instrumental in improving the overall export performance of this sector. Its exports are directed not only to the developing countries but also to the developed countries of the world including USA, Federal Republic of Germany, USSR, Japan, etc.

In view of a number of favourable factors like introduction of Generalised System of Preferences, vacation of certain labour-intensive industries by developed countries and increasing trend towards international sub-contracting, there are good prospects for giving a further fillip to the small sector exports. To evolve a suitable export strategy for developing exports from small sector and for periodical review of various facilities and programmes of export promotion with a view to suggesting policy measures for removing constraints and bottlenecks being faced by the exporting units, the Ministry of Commerce has recently set up a Steering Committee for export promotion in small scale sector.

Apart from export promotion organizations like Trade Development Authority, State Trading Corporation and Export Promotion Councils which offer a package of assistance to the exporting small units, Small Industries Development Organization, through its network of Small Industries Service Institutes, provides techno-managerial assistance and extension services for promoting small sector exports. The Organization has been recently strengthened to provide assistance in new, sophisticated lines such as electronics, electricals, chemicals and plastics. Further, a separate export promotion division has been created to give exclusive attention to the promotion of exports from small sector. Programmes like modernization of selected industries, facilities for quality control at 4 regional testing centres, technical guidance and assistance in product adaptation and development are all aimed at strengthening the overall export capability of the small scale sector units [*Econ commerc News*, 1980, 10(35), 4].

Hydel Power Generation

According to Energy Ministry's latest assessment of the power situation in the country, hydel generation during the rest of the year is expected to increase by 10-12% and thermal generation by 10%. The overall increase in the power generation this year is expected to show a net increase of 8% as compared to last year.

In order to increase thermal generation, the government has initiated several long-term and short-term steps. These include: maximizing generation from the existing capacity, ensuring the supply of requisite quantity and quality of coal to plants, timely supply of spare parts and regular monitoring at the highest level.

The government is also laying emphasis on expediting the commissioning of new generating capacity, better project management, transfer of power from surplus to deficit areas and assisting the State electricity boards to introduce planned betterment programmes and preventive maintenance schemes.

Long-term measures initiated so far, include training of engineers for maintenance of power stations, identifying deficiencies and rationalization of the management of power supply industry (F.E., 13.9.80).

ENGINEERING INDUSTRY

Fuel Cells for Transportation

Fuel cells for transportation are being examined at the Los Alamos Scientific Lab., USA. In particular, future automotive propulsion systems will exploit fuel cells as energy sources. The fuel cell converts chemical energy directly to electrical energy. The most common types of fuel cells are hydrogen-air cells that generate electricity directly from the chemical reaction of hydrogen and oxygen which yields water.

Theoretical efficiencies for a pure hydrogen fuel cell could be as high as 85%. Fuel cell systems with efficiencies of 50% have already been fabricated. The primary vehicle developed so far has been a fuel cell/battery hybrid vehicle in which the fuel cells are paralalled by batteries [*Tech Surv (Predicasts, USA)*, 1980, 36(20), 7].

Vibration Meter

An engineer entrepreneur in the cooperative sector has developed indigenously an electronic vibration meter.

The meter of pick-up type is portable and operated by both battery and mains. It can measure vibrations of bearing and moving parts of machines. The vibration meter is a hermetically sealed unit to sense vibrations as low as one micron.

Manufacturer: Continental Instruments Cooperative Society Ltd, B-8, Industrial Estate, CB Ganj, Bareilly (F.E., 14.9.80).

Solar Drier

The Directorate of Fruit Processing and Preservation Industry (Khadi and Village Industries Commission) has developed a solar drier for drying vegetables and fruits.

Made of G.I. sheet, thermocole insulation and glass, the drier cabinet maintains an average heat of 70°C, and is standardized for drying 5 kg of Thompson seedless grapes within 2½ hrs, as against 30-35 hrs taken in conventional drying. The product exhibits a marked improvement in colour and storage characteristics. It costs about Rs 450 and can be easily fabricated in a small workshop [*Chem Times*, 1980, 7(34), 16].

Rotary Engine

Automotive Studies Institute (Aachen, W. Germany), has developed an axial-piston rotary engine that can continuously combust any gaseous or liquid fuel with 7 cylinders rotating around a common axis, the engine uses high temperature combustion to achieve stable pressure inside the block. Present maximum output is 60 hp at 3,000 rpm. Development problems are high temperature in the combustion chamber and frictional losses [*Tech Surv (Predicasts, USA)*, 1980, 36(36), 9].

Solar Panel

The Central Electronics Engineering Research Institute, Pilani, has developed a 40 Watt solar panel to convert solar energy into electricity which can be used for lighting houses, for small fans, water pumps and other domestic purposes. The panel has been fabricated using 40 silicon solar cells in series of the size 4 sq.cm. The Institute will be able to run a pilot project on 1 kW panel, capable of meeting complete power requirement of a village by 1982. Since solar energy do not require grids, major expenditure on laying the transmission lines and transmission losses could be saved.

Fast Thermometer

A fast response electronic thermometer having a high degree of repeatability has been developed by the National Aeronautical Laboratory, Bangalore, for industrial use.

Besides temperature monitoring, the thermometer finds use in process control applications as the output is an electronic parameter voltage.

Such types of thermometers could also be used in aircrafts for measuring outside air temperature, and on masts for measuring atmospheric temperature.

The novel feature of the thermometer is that it requires calibration only once in two years. While it takes about a minute for the mercury glass thermometer to record the temperature, the electronic thermometer requires less than a second.

The instrument has been tested by the Systems Engineering Division of the Laboratory to evaluate its performance. The experimental results obtained hitherto after intensive use of the unit in temperature monitoring have indicated its satisfactory functioning.

Considering the performance, such types of thermometers are relatively inexpensive and easy to construct.

Facit Decitab

Facit Asia Ltd, Madras, has introduced India's first typewriter with a built-in decimal tabulator. It is specially designed to facilitate easy and accurate typing of numerical tables and statements. It ensures faultless and neat statements in correct mathematical formation, reduces typing operations and saves time, and is ideal for presenting any kind of figure work [*East econ.* 75(12), 706].

CHEMICAL INDUSTRY

Production of Chemicals

Production of fertilizers (particularly nitrogenous fertilizers) and chemicals in the country has shown a general declining trend in the current year as compared to that of 1979.

According to official figures, production of nitrogenous fertilizers in terms of nitrogen declined from 6.5 lakh tonnes during the quarter April-July 1979 to 5.44 lakh tonnes during April-July 1980. The capacity utilization of nitrogenous

fertilizer plants during the current year is only 46%. Production of phosphatic fertilizer, however, improved slightly. Production of phosphate went up from 2.56 lakh tonnes in April-July 1979 to 2.64 lakh tonnes in April-July 1980.

Caustic soda, liquid chlorine, calcium carbide, carbon black, phenol, acetic acid, acetic anhydride, BHC, DDT, total pesticides (tech), furnace carbon black, and photographic chemicals all showed a downward trend in 1980 as compared to their production in 1979. Only a few chemicals like soda ash, potassium chlorate, red phosphorus, methanol, acetone and phthalate plasticizers showed marginal increases in production in 1980 as compared to the previous year [*Chem. Times*, 1980, 7(33), 1].

Chemicals Exports

The Basic Chemicals, Pharmaceuticals and Cosmetics Export Promotion Council seems to be well poised to achieve its export target of Rs 200 crores fixed for the year 1980-81, if the present trend is any indication.

Exports of basic chemicals, pharmaceuticals and cosmetics in the first 4 months ending in July this year have crossed Rs 73 crores against exports of Rs 51.13 crores in the same period last year and the Council is quite confident of not only achieving the export target of Rs 200 crores fixed for the current year but also of exceeding it.

The major items that have contributed to the impressive rise in exports in the current year so far have been drugs, pharmaceuticals and fine chemicals, which rose from Rs 19.6 crores in 1979-80 to Rs 32.18 crores, glycerine, soaps, detergents, cosmetics and toiletries from Rs 4.85 crores to Rs 8.72 crores, and crude drugs from Rs 5.43 crores to Rs 11.93 crores. There have, however, been some items which have registered decline in exports which include basic organic and inorganic chemicals from Rs 7.42 crores to Rs 7.13 crores and essential oils from Rs 3.05 crores to Rs 1.08 crores.

The major importers during the period have been USSR, USA, Japan, Belgium, Iran, West Germany and France [*Chem Times*, 1980, 7(35), 1].

Beta-naphthol Plant

A beta-naphthol plant (cap. 660 tonnes/yr-2 shifts), based on the Central Fuel Research Institute's patented process, has gone into production on 10 August 1980 in the Bokaro industrial area. The process had been licensed to Eastern Naphtha-Chem. Ltd (ENCL), Dhanbad. The Chemical and Metallurgical Design Co. Pvt. Ltd, New Delhi, did the design and engineering work of the plant.

Beta-naphthol is a very important chemical in industries, the demand of which is around 10,000 tonnes/yr. It is used in the production of dyestuffs, pharmaceuticals, etc.

At present, 3 private companies, based on foreign know-how, are manufacturing beta-naphthol for their captive uses. So far the demand for beta-naphthol is being met mostly by import. ENCL will be the very first to offer this product in the open market.

Water-based Paint

The Alkali and Chemical Corporation of India (ACCI) Ltd, Calcutta, has produced for the first time in the country, electrocoat, a water-based paint providing an effective long-term corrosion resistance. ACCI claims that its product, based on indigenous raw material, will save scarce petroleum solvents used in conventional paints.

Electrocoat will be of immense value for commercial vehicles and equipment made of ferrous metals. The paint diluted with water is kept in a tank with continuous circulation and the article to be painted is fully immersed in the paint-bath.

The use of electrocoat eliminates solvent vapour pollution [*East econ*, 1980, 75(9), 560].

Carboxymethyl Starch (CMS)

The Shri Ram Institute of Industrial Research, Delhi, has developed a modified (carboxymethyl) starch which provides a better material for textile processing. The product yields a size suitable for all spun yarns of vegetable and animal origin as well as synthetic fibres and their blends. In printing, it is suitable for neutral and alkaline printing, such as rapidogens, rapid fast colours, indigosols and vats. CMS also finds use in textile finishing and as a convenient domestic laundry starch. With suitable modifications and purification, it can be used in paper sizing, detergents, edible jellies, cosmetics, insecticide sprays, toiletries, adhesives, etc.

The process has been licensed through the National Research Development Corporation of India Ltd, 61 Ring Road, Lajpat Nagar III, New Delhi 110024 [Monthly Newslett, Investment Centre, 1980, 17(9), 72].

New Resorcinol Route

Mitsui Petrochemical Industries Ltd, Tokyo, has successfully started up its 3,000 tonnes/yr resorcinol plant at Iwakuni City. The first-of-the-kind technology uses *meta*-di-isopropyl-benzene as the feedstock. Unlike the conventional alkali fusion of sulphonated benzene route, the technology is said to be pollution free [*Chem Engng*, 1980, 87(11), 306].

Know-how for Resins

The Regional Research Laboratory, Jammu, has developed a completely indigenous know-how for the production of resins. By varying the parameters the technology can also be used in the manufacture of hydrogenated resin. The catalysts employed in the process are also developed at the Laboratory.

So far all these products are being imported. Hydrogenated resin finds application in the production of adhesives, surgical tapes, high grade paper and other specialized products. highly hydrogenated resin is used to produce chewing gum and hot metal coatings and adhesives.

Dimethyl Aniline Process

A process based on the continuous catalytic vapour phase methylation of aniline to produce dimethyl aniline has been developed by the National Chemical laboratory, Pune. It is claimed that the process is unique and first of its kind in the world. One special feature of the process is that the activity of the catalyst is maintained at a steady value by continuous introduction of an activating agent along with the feed stream.

The Laboratory has not only developed the process successfully but also designed a commercial plant of 300-400 tonnes/yr which was installed by Sahyadri Dyestuffs and Chemicals, Pune, and operated successfully to produce 1,000 tonnes of the product of the required specifications. Subsequently, the firm designed and installed a commercial plant of 3,600 tonnes/yr capacity at Dewas.

Dimethyl aniline is an important intermediate used in the dyestuffs industry and also in the manufacture of Tetryl (N-methyl, N, 2,4,6-tetra nitroaniline), a booster explosive.

Butanol

According to J. Smith of the Agricultural Engineering Dept, Colorado State University (Ft Collins, Colo), butanol, an alcohol fermented from grain in an airless environment, makes an excellent diesel fuel when mixed 40:60 with diesel oil. Butanol production is more energy-efficient than ethanol since it requires no complicated distillation [*Tech Surv (Predicasts, USA)*, 1980, **36**(36), 6].

MISCELLANEOUS INDUSTRIES

Cement Industry—Problems and Prospects

India is the eighth largest cement producer in the world. The total production of cement (all varieties) in 1979-80 was 1.8 crore tonnes as compared to 270 lakh tonnes in 1950-51.

At present, there are 56 cement manufacturing units having a total installed capacity of 240 lakh tonnes. There is a likelihood of setting up of more units. A number of projects are under various stages of implementation.

The demand for cement has been growing at a fast rate because of the quickening pace of construction activities. Demand pressure can be reduced by using slag cement derived from slag, a byproduct of the steel industry and inferior to the standard portland cement, for housing construction and other small projects.

The cement industry faces a large number of problems specially transport. Cement factories are largely concentrated in the southern and western regions of the country, as high grade limestone is more abundantly available there, while the demand is higher in the northern and eastern regions.

Irregular distribution through permit system is mainly responsible for profiteering and black market. It is important to devise an improved distribution system and to encourage investment by the private sector in the industry (F.E., 17.9.80).

Paper Boards from Agricultural Wastes

The Regional Research Laboratory, Jammu, has developed one semi-automatic pilot plant for processing wood and fibre wastes into paper boards of various types for different uses. Agricultural waste materials such as paddy straw, pine needles, wild grasses, and fibre wastes like tailor cuttings, discarded gunny bags, etc. can be converted into usable boards. The multipurpose pilot plant is the first of its kind particularly suitable for the utilization of unconventional raw materials and wastes for board manufacture.

A commercial plant of 2.4 tonnes/day capacity is likely to cost Rs 10.5 lakhs.

Protein - Producing Bacterium

The Indian Institute of Experimental Medicine (IIEM), Calcutta, has developed a beneficial strain of the bacterium *E. coli* used in producing amino acids: methionine, lysine and threonine. This process of production involves only a single-stage fermentation process. These amino acids which constitute proteins are used in fortification of food products with proteins and in pharmaceutical preparations.

The Institute has also developed a simple and rapid method of isolating a type of protein called lectins. The IIEM method harnesses agricultural residues for obtaining the high-valued sugar-binding lectins which find wide applications in biomedical sciences for blood typing and detection of chromosomal abnormalities, in analytical biochemistry and in cell and molecular biology (F.E., 20.9.80).

Cheaper Wool Printing

Transfer printing, a process where a design first printed on paper is transferred to a textile by hot pressing, is used widely for printing synthetic textile, particularly polyester. The technique, however, had never been used to print woollen fabrics as the dyes used had poor attraction for wool.

Scientists of the Textile Division of the Australian Commonwealth Scientific & Industrial Research Organization have recently found a new type of dye which is suitable for wool in a slight variation of the transfer printing technique mentioned above.

The process starts with a simple pretreatment of the wool with a mixture of chemicals containing chromium. Special dyes are used that are capable of forming complexes with chromium which in turn have a strong attraction for wool.

The treated textile is placed in contact with the paper which has been printed with the dyes and heat pressed at 200°C for 30 sec. On heating, the dyes transfer to the chemical mixture on the surface of the wool fibres where they interact with the chromium.

When the textile is steamed, the metal-dye complexes diffuse into the fibres and the resultant colours are strong and wash-resistant (Australian Information Service).

TRADE ENQUIRIES

*Felez-Avar Corporation, 5410 Wilshire Boulevard, Suit 900, Los Angeles, California 90036, USA. The firm desires to import all kind of tools (mechanical, electricals household) as well as industrial machines.

*Jose N. Soriano Balaguer, Avenida del Puerto, 40-14a, Valencia 23, Spain. The firm desires to import oil cake from mahua seeds, natural drugs such as aristolochia bracteata retz, aristolochia indica linn, acorus calamus linn, adhatoda vasica nees, albizzia procera benth, barringtonia acutangula gaerth, diploknema butyracea h.j. lamb, pongamia pinnata pierre, randia brandisii gamble, staphisagrea semina - dephinium erunananum.

*D.S. A/S Mari, P.O. Box No.124, N 1310 Blommenholm, Norway. The firm desires to import all kinds of machinery (except electrical).

*Ing. F. Frostad, niels Juelsgt 35, Oslo 2, Norway. The firm desires to import farm as well as garden equipment and machinery, leathergoods, saddles/harness and all leather goods for racing and riding horses, leather equipment/collars-harness for dogs, etc.

*Lucky Ghabel Trading Company, 3003 Empelds, Hanover, Goethe Strassa 6, West Germany. The firm desires to import bicycles, motorbikes and scooters, auto-spare parts and tools, electronic sound equipments like video, cassettes and radio, novelties and new products.

*Zellas Trading Company, 74 Solonos Street, Athens, Greece. The firm desires to import pin making machines.

*Luciano Dal Monte, Casella Postale 25, Rome 0040, Italy. The firm desires to import all kinds of readymade garments, gift articles, handicraft goods, imitation jewellery, precious and semi-precious stones, electrical equipments and toys, ceramic products, stationery items, etc.

*Wainscot (Nig.) Enterprises, 19 Docemo Street, P.O. Box No.5264, Lagos, nigeria. The firm desires to import engineering files and sharpening stone.

*SIFAD Trading & Agencies Co., P.O. Box No.161, Alexandria, Arab Republic of Egypt. The firm desires to import sanitary-ware (mixer's bath tubs and wash basins etc.), glazed wall tiles, ceramic floor tiles, scissors for cutting wall and floor tiles, mirror, cabinets, brass valves, galvanised pipe fitting, stainless steel sinks, filter water, adhesive materials (used for sticking formica to wood to wood, leather to leather and to other material), hardware goods such as linings, locks, handles, etc.

*Mohamed Hamza El-Kassas, 44 Gawhar El Kaid Street, Mousky, P.O. Box No.1831, Cairo, Arab Republic of Egypt. The firm desires to import agarbatti, spices, tamarind, chemicals (aluminium and potasium sulphate, borax, ultra marine blue, ammonium bicarbonate), herbs and medicinal crude drugs, essential oils, etc.

*Jasem Al-Shereeda Trading Est., P.O. Box No.26363 Safat, Kuwait, Arabian Gulf. The firm desires to import textiles, building materials, hardware, handicraft goods, foodstuffs, etc.

*Naboth's Enterprise, P.O. Box No.A-150, Labadi, Accra, Ghana. The firm desires to import wood charcoal making machine.

*Jabreen Pharmacy, P.O. Box No.4526, Muscat, Sultanate of Oman. The firm desires to import pharmaceuticals, cosmetics, toiletry, perfumery and allied products, babycare products, medical equipments and accessories, hospital supply items.

*Dilbagh Trading Co., Avenue Amir Kabir, Koucheh Nazimulteba passage Babayou, Tehran, Iran. The firm desires to import auto spare-parts, auto bulbs, handtools, electrical goods, kitchen appliances, etc.

*Analux Paints Factory, P.O. Box No.13/1321 Tehran, Iran. The firm desires to import paints and relevant chemicals.

*Qazi Masoddllah, 9 DC Market, Upper Jessore Road, Khulna, Bangladesh. The firm desires to import know-how and machinery for setting up plants on turn-key basis for producing steel, steel spring leafs for automobiles, bright steel alloy steel shaftings and sections, etc.

*Rahman & Rahman, Asjad Buildings, 7/1, hare Street, Wari, Dacca 3, Bangladesh. The firm offers its services for obtaining patents and trade marks in Bangladesh.

ANNOUNCEMENTS

AWARDS

Independence Day National Awards

Five firms (2 for bronze shields and 3 for certificate of merit) have been selected for the above awards for import substitution by the Board of Awards for Import Substitution. Award winners are:

Bronze Shields: (1) Indoswe Engineers Pvt.Ltd, pune, for the development of silicon brass tubes to din standard and hollow copper conductors, and (2) Accumax Engineering, Bombay, for the development of tungsten carbide tipped circular saw blade.

Certificate of Merit: Best and Crompton Engineering Ltd, Madras, for the development of isolated phase busduct, Arun Hosier Mills, New Delhi, for the development of anti-collision light; and P. Bhattacharyya, National Instruments Ltd, Calcutta, for the development of radiation instruments.

Birla Memorial Award

The Indian Physics Association has decided to give its first award (R.D. Birla Memorial Award) to Prof. Abdul Salam, the Nobel laureate, for his fundamental contributions in physics.

National Award

Walchandnagar Industries has received the National Award consisting of a special certificate, a silver cup and cash for successfully reducing the average rate of accidents.

CONFERENCE & SEMINARS

EEPC Conference

The Conference on the possibilities of cooperation between western European countries and Indian engineering firms in third countries, being organized by the Engineering Export Promotion Council of India, will be held on 24-25 November 1980 in Paris.

Plastics Seminar

The Asian Productivity Organization, Tokyo, is organizing a seminar and conference on plastics technology to be held in West Germany from 24 November to 5 December and 8 to 10 December 1980.

Cement Manufacture Seminar

All India seminar on cement manufacture, organized by the Cement Research Institute of India (CRI), will be held from 19 to 21 January 1981 at New Delhi.

Main themes of the seminar are: new large size plants, manufacture of blended cements, and packing and its utilization.

For further information write to: Director-General, CRI, M 10 South Extension Part II, New Delhi 110049.

TECHNOLOGY FROM ABROAD

*A French company is interested in a collaboration in India for the manufacture of solid state converters for induction heating and cookware bottoms brazing equipment.

*A Dutch firm is interested to provide technical know-how for the manufacture of industrial thermometers used for measuring physical properties of gas.

*A Yugoslav firm has shown interest in collaborating with a suitable Indian party holding letters of intent for the manufacture of industrial explosives in India.

Interested Indian parties may contact: Indian Investment Centre, Jeevan Vihar Building, Sansad Marg, New Delhi 110001.

PUBLICATIONS

Indian Economy at a Glance, Indian investment Centre, New Delhi. Price Rs 5.

The publication gives a comparative picture of important sectors of the economy from 1960-61 to date. Some of the information presented in this book is not available in published from elsewhere.

Joint Ventures Abroad—Status and Guidelines, Indian Investment Centre, New Delhi. Price Rs 5.

The publication gives summary statement of the number of Indian joint ventures, country-wise and industry-wise.

Export Incentives (Volumes I and II) by Anita Kumari; Anupam Publishers, WP 456, Wazirpur (Ashok Vihar), P.O. Box 8405, Delhi 110052. Price Rs 65.

The first volume gives rates of cash compensatory support, import replenishment licences, duty drawback, etc. as also information relating to procedures and documentation.

The second volume gives the alphabetical index of all items entitled to the most important incentives, namely, CCS, Rep. and drawback. The volumes also contain specimen forms and documents prescribed for claiming export assistance.

The marketing development assistance scheme and the marketing development allowance granted in the form of rebate in income tax relating to expenditure on export promotion are dealt with in separate chapters (F.E., 14.9.80).

Case Subsidy by Anita Kumari; Anupam Publishers, WP 456, Wazirpur (Ashok Vihar), P.O. Box 8405, Delhi 110052. Price Rs 15.

The book contains CCS rates, a detailed analysis of the CCS policy for cotton textiles, including readymade garments procedures and documents, information relating to the air-freight subsidy, supplementary cash assistance and the simplified payment scheme (F.E., 14.9.80).

Cell System of Production by David Jackson; Business Books Ltd, 24, highbury Crescent, London N 5, (Agents in India: B.I. Publications, 18, Lansdowne Road, Bombay). pp.169. Price Rs 180.50.

The book is a pragmatic analysis of an effective organizational structure predicated on group orientation. It identifies the essential factors that govern the design of an effective production system and compares existing systems with the group concept.

It is divided into 6 chapters: production system design; traditional production systems; cell systems of production; component family and cell formation; and case studies. While the first 5 chapters develop the theme of the cell system in a logical and sequential fashion, the last one presents 10 case studies which show the applicational aspects of the cell system of production as successfully practised in the UK. The book is amply illustrated by diagrams, charts, tables and pictures. The bibliography is comprehensive.

The book is useful for the production manager and his staff (F.E., 14.9.80).

INDUSTRIAL NEWS DIGEST

Volume 3 Number 12 December 1980

Editor: S.K. Nag

Asst. Editor: M.M.S. Karki

Ed. Asst.: Madhu Bala

Published by the Publications & Information Directorate, CSIR

Hillside Road, New Delhi-110012

Chief Editor: Y.R. Chadha

The *Industrial News Digest* is issued monthly. It provides condensed technical and techno-economic information to industrialists, prospective entrepreneurs, and experts in both government and private agencies dealing with the management and planning of industry. Write-ups on new processes and products are welcome.

News items appearing in the *Digest* may be reproduced with due acknowledgement.

SUBSCRIPTION RATES

Annual: Rs 20.00/£ 4.00/\$ 8.00

Single Copy: Rs 2.00/£ 0.50/\$ 1.00

Subscriptions by M.O/Cheque/I.P.O. payable to "Publications & Information Directorate" should be sent to the Sales & Distribution Officer, Publications & Information Directorate, Hillside Road, New Delhi-110012.

CONTENTS

Miscellany	1-2
Chemical Industry in 1979-80	3-6
Industrial News	
Foreign collaboration ban, Industrial production	7-8
Engineering export, Light-weight gas torch, Steel forging industry, Silicon tester	9-10
Aromatic plants, Oxo alcohols, Ethylene from ethanol, Sulphur- removal catalyst, Boric acid scarce, Vanadium from ilmenite, Cholesteric liquid crystal	10-12
Cosmetics export, Shoe tacks exports, Leather goods export, New paraffin plant	12-13
Trade Enquiries	14-15
Announcements	
Awards; Seminars; Exhibition & Fairs; Training; Energy Sources; A Select Bibliography; Publications	16-18

INDUSTRIAL INFORMATION SERVICE

In the course of bringing out a nine-volume, serial encyclopaedia, *The Wealth of India—Industrial Products*, covering more than 250 important engineering, chemical and miscellaneous industries including those based on traditional Indian crafts, this Directorate built up a store of industrial information. After the completion of the above encyclopaedia, an Industrial Information Service (IIS) was launched a couple of years ago. Since then the IIS has added more information to the already existing store and is now in a position to disseminate information on a wide range of industries (in both large and small scale) to industrialists, prospective entrepreneurs and management personnel involved in industrial planning and policy-making.

The IIS offers the following services, besides bringing out the *Industrial News Digest*.

Query-Answer Service

All enquiries pertaining to technology, R & D, and techno-economic data on number and distribution of manufacturing units, installed capacity, production, demand, consumption, and imports and exports.

Bibliography Service

General and in-depth bibliographies on industrial topics are supplied on demand.

Reprography Service

Xerox copies of documents are supplied at the rate of Re 1.00 per page.

For the above services contact:

S.S. Nathan/V.K. Sharma

Industrial Information Service, Publications & Information Directorate (CSIR), Hillside Road, New Delhi 110012

Abbreviations Used

B.S.	Business Standard
E.T.	Economic Times
F.E.	Financial Express

Energy from Biomass

As more than 80% of the commercial energy needs of the developing countries and about 74% of the needs of the industrialized countries are being provided by oil and gas, the ever escalating oil prices together with the fear that proven oil supplies are expected to be depleted in the next 65 years have made the oil-importing countries of the world jittery. Understandably, they are taking an increasing interest in energy sources other than oil, e.g. bioenergy among others. Thus, it is not surprising that in April 1980 leading experts in bioenergy from 76 countries met at Atlanta, USA, to conduct a World Congress and Exposition on Bioenergy. At the meeting it was evident that Brazil, China, Sweden and USA are the leaders in this field.

The Brazilian programme is impressive, especially in the production and use of alcohol. At present, most Brazilian automobiles burn gasohol—a mixture of petroleum and alcohol. But the Brazilians are moving beyond gasohol to employ only alcohol as motor fuel. The source of their fuel is fermentation of sugar from sugarcane. They are also working on other sources such as cassava roots and eucalyptus trees.

Another interesting effort to expand the use of biomass is being made by Sweden. The Swedes plan to grow fast-rotation trees that can be harvested every 3-5 years and shift to wood as prime source of energy.

The efforts of the People's Republic of China to produce methane from biomass wastes are very impressive. They already have about 75 lakh biogas installations.

In USA, at least 600-700 different research and development projects are being conducted that are aimed at increasing use of bioenergy.

The use of biomass has also become a reality in Hawaii which is obtaining about 13% of its electricity from this resource. The private sugar companies have succeeded in not only producing biomass energy for their own use, but also for the population in general.

Coming to the Indian scene, the country is already in the process of tapping this cheap and renewable source of energy, at least from the beginning of seventies, in the form of gobar gas. It is heartening to learn that the Planning Commission has also begun to consider alcohol as a petrol substitute. Being one of the leading producers of sugarcane, India possesses a great potential for the production of power alcohol.

The Origin of Organic Chemical Industry

Till the beginning of the 19th century chemical industry was essentially a "mineral" industry, which engaged itself on the manufacture of several basic products like soda, hydrochloric acid and sulphuric acid. The processes employed were well established. In fact, the Leblanc method for soda and the Glover or the Gay-Lussac method for sulphuric acid enjoyed a classical status.

The manufacture of dyestuffs which was very important for the textile industry was at this period dependent on the use of vegetable substances. The methods were not very sophisticated and technology was, more or less, at a standstill.

After 1820, however, the chemistry of pharmaceutical substances and foodstuffs began to develop. Work was undertaken on alkaloids. P.J. Robiquet, a pharmacist, discovered asparagine, narcotine and caffeine.

In the field of plant and animal chemistry, the work of Chevreul on saponification, of Braconnot on fermentation, of Cram on vegetable dyes were advantageously used in the manufacture of soap, candles and natural dyestuffs. On the whole, their use was largely confined to small enterprises.

The manufacture of illuminating gas from the distillation of coal in Great Britain and France around 1820 furnished chemists with basic aromatic compounds like benzene, toluene and naphthalene of which they could determine the composition but not the structure.

Aniline, the basis of the production of artificial dyestuffs in the future, was discovered by the Russian chemist N.N. Zinin in 1842, and was synthesized by A.W. Von Hofmann in 1845.

The emergence of the chemistry of aromatic compounds brought about a profound scientific change. The event led to a mutation in the relationship between research and its applications, not only with regard to the use of a body of theoretical knowledge which underwent continual improvement and development, but also with regard to the technical equipment and financial resources which it required.

These scientific and technological developments during the first half of the 19th century really ushered in the modern age in the organic chemical industry.

What Do You Say?

Next month the *Industrial News Digest* enters its fourth year of publication. During its 3-year-old life the periodical has gained in popularity (though not so much that we should dance in glee) and has attracted subscribers not only from industrial, business and educational centres but also from some very obscure places. However, we are not resting on our laurels. We feel there is still a lot of scope for improvement. But, as any improvement should benefit our readers, we want you, readers, to suggest changes and additions which would make the *Digest* more useful to a large cross-section of industrialists, entrepreneurs and persons engaged in industrial planning and policy-making. It will not be an one-way communication. For, we shall publish at least some of the letters along with our reaction to their contents.

CHEMICAL INDUSTRY IN 1979-80

Occupying a pre-eminent position in the national economy, the chemical industry ranks fourth (after iron and steel, engineering and textile) among the major industries of India. It covers a wide range of industries, some of giant proportions, such as fertilizer and petro-chemical complexes, and some of medium and small size, such as paints and pharmaceuticals. The Indian chemical industry has the distinction of occupying the 10th position in the world production of chemicals.

Production of fertilizers and chemicals in the country has shown a general declining trend in 1980 when compared to that of 1979. Only a few chemicals like soda ash, potassium chlorate, red phosphorus, methanol, acetone and phthalate plasticizers showed marginal increases. Heavy power cut all over the country has been the main factor responsible for the decline in production during 1980.

FERTILIZERS

Production of nitrogenous fertilizers during 1979-80 marginally exceeded production achieved during previous year. Production during the year was 22.26 lakh tonnes as against 21.70 lakh tonnes during 1978-79. It would have been higher but for power cuts and difficulties in the availability of inputs such as coal and fuel oil.

Production of phosphatic fertilizers during 1979-80 was slightly lower than production attained during the previous year. Production during the year was 7.57 lakh tonnes in terms of P_2O_5 as against 7.70 lakh tonnes in 1978-79. The shortfall occurred mainly on account of inadequate availability of imported phosphoric acid.

INORGANIC CHEMICALS

Among the inorganic chemicals which have considerable industrial use are sulphuric acid, hydrochloric acid, nitric acid, caustic soda and soda ash.

In 1979-80, heavy power cuts adversely affected the production of two major inorganic chemicals, namely, soda ash and caustic soda. During the year, soda ash production amounted to 5.56 lakh tonnes against 5.64 lakh tonnes in 1978-79. To relieve the consequent shortages, the government arranged for imports of 20,000 tonnes each of soda ash and caustic soda through the State Trading Corporation. The status of the inorganic chemical industry is shown in Table 1.

ORGANIC CHEMICALS

Production of major organic chemicals during 1979-80 disclosed a mixed trend. While production of acetic anhydride, acetic acid and methanol was higher than during 1978-79, production of phenol and acetone was marginally lower. The details of capacity installed sanctioned, production and estimated demand of the major organic chemicals are indicated in Table 2.

TABLE 1—STATUS OF INORGANIC CHEMICAL INDUSTRY
(In thousand tonnes)

	Installed capacity	Additional sanctioned capacity	Production		Demand expected (1983-84)
			1978-79	1979-80	
Soda ash	632.6	982.0	581.3	555.8	800.0
Caustic soda	768.8	388.0	563.5	550.0	800.0
Calcium carbide	140.2	141.0	91.3	86.5	170.0
Carbon black	105.7	40.7	71.7	71.6	107.0
Potassium chlorate	13.2	4.4	8.2	8.8	13.5
Red phosphorus	1.0	1.5	0.9	0.9	1.3

TABLE 2—STATUS OF ORGANIC CHEMICAL INDUSTRY
(In thousand tonnes)

	Installed capacity	Additional sanctioned capacity	Production		Demand expected (1983-84)
			1978-79	1979-80	
Phenol	20.9	55	14.5	14.14	38.5
Acetic anhydride	14.77	7.45	8.93	11.2	27.5
Acetic acid	42.94	19.27	31.40	32.46	55
Methanol	44.5	99.25	39.12	43.21	93.2
Acetone	25.7	33.64	21.09	20.42	38.50

DYESTUFFS

Indian dyestuffs industry has made considerable progress, although a beginning was made only as late as in 1952. Present production of dyestuffs covers a range of over 600 types in various groups (azo dyes, basic, disperse dyes, optical whitening agents, reactive dyes and organic pigments). The pace of development in the dyestuffs manufacturing sector has been so spectacular and pronounced that there is self-sufficiency both in finished products and intermediates, of which there are some 85 items.

The production of dyestuffs of various groups was satisfactory during 1979-80. The total production of dyes and dyestuffs in the organized sector increased from 20,294 tonnes in 1978-79 to 20,564 tonnes in 1979-80. More than 95% of the dyestuffs consumed in the country are now being produced in the country. Even, sophisticated dyes like acrylic fibre dyes are being produced indigenously. Only highly sophisticated types of dyes are imported.

PESTICIDES

The pesticides industry has a vital role in crop protection. In all 36 types of technical pesticides are produced in the country. At present, installed capacity for

the manufacture of technical grade pesticides in the organized sector is 70,475 tonnes. Further capacities to the extent of 23,500 tonnes covered by industrial licence and 21,785 tonnes by letters of intent are under various stages of implementation. Production of technical grade pesticides in the organized sector was 42,598 tonnes in 1977-78, 52,726 tonnes in 1978-79, and 50,109 tonnes in 1979-80. In 1979-80, the production of B.H.C. and malathion was 31,829 tonnes and 2,121 tonnes respectively.

Production of new pesticides like Bavistin, Monocrotophos and Basalin commenced in the country during the year under review.

DRUGS

The production of drugs and pharmaceuticals continued to increase and the output in 1979-80 is estimated to be of the order of Rs 220 crores of bulk drugs and Rs 11.5 crores of formulations. There has been an overall increase in the production of most of the essential items. Increases have been effected in respect of antibiotics, sulpha drugs, vitamins, analgin, amodiaquin, anti-dysentery drugs, insulin, chlorpropamide and caffeine. Doxycycline and gantamycin were produced in the country for the first time.

TRADE

For the year 1980-81, the Basic Chemicals, Pharmaceuticals and Cosmetics Export Promotion Council has envisaged an export target of Rs 200 crores.

Exports of basic chemicals, pharmaceuticals and cosmetics in the first 4 months ending in July this year have crossed Rs 73 crores against exports of Rs 51.13 crores in the same period last year.

The major items that have contributed to the impressive rise in exports in the current year so far have been drugs, pharmaceuticals and fine chemicals which rose from Rs 19.6 crores in 1979-80 to Rs 32.18 crores, glycerine, soaps, detergents, cosmetics and toiletries from Rs 4.85 crores to Rs 8.72 crores, and crude drugs from Rs 5.43 crores to Rs 11.93 crores. There have, however, been some items which have registered decline in exports which include basic organic and inorganic chemicals from Rs 7.42 crores to Rs 7.13 crores and essential oils from Rs 3.05 crores to Rs 1.08 crores.

The major importers during the period have been USSR, USA, Japan, Belgium, Iran, West Germany and France.

While India has set up a chemical industry almost on a level with the developed countries in the course of very few years, it is still necessary to import large quantity of basic chemicals every year. Despite the impressive production of drugs and pharmaceuticals, India has to import substantial quantities of antibiotics, sulpha drugs and other life-saving drugs every year. Chemical export for 1978-79 is presented in Table 3.

The value of drugs imported during 1979-80 was expected to be of the same order as in the previous year. In view of the escalations in prices of imported bulk

TABLE 3—EXPORT OF CHEMICALS
(In Rs crores)

	Total export in 1978-79
Drugs, pharmaceuticals & fine chemicals	63.42
Dyes & intermediates	27.23
Basic inorganic and organic chemicals including agro-chemicals	27.06

drugs, the quantities imported during 1979-80 were lower than during 1978-79. Only those essential drugs and formulations which are not produced in the country or the indigenous production of which is not adequate to meet internal demand are imported [*Rep Minist Petrol Chem Fert*, 1979-80; Revathi, *Chem Times*, Sept 1978, 8; *Industr News Digest*, 1978, 1(10) 1-4; 1(11) 1-3; 1980, 3(10); *Chemexcil Export Bull*, 1979, 13(8) 10].

ADVERTISEMENT TARIFF

	Print area (mm)	Single insertion (Rs)	Three insertions (Rs)	Six insertions (Rs)	Twelve insertions (Rs)
Full page	180 × 120	175	500	900	1600
Half page	90 × 120	100	300	500	900
Second, third and fourth co- vers (full page only)		—	—	1200	2000

- ☐ The Editor reserves the right to refuse any advertisement.
- ☐ Advertisement matter should be preferably in the form of *art pull*.
- ☐ Matter for advertisement should reach the Editor one month in advance.
- ☐ Advertisement charges (by m.o./cheque/I.P.O.), payable to "Publications & Information Directorate", should be sent in advance to the Editor.

INDUSTRIAL NEWS

GENERAL

Foreign Collaboration Ban on Select Industries

A ban, both financial and technical, on foreign collaboration in industries, where indigenous technology is sufficiently developed, is on the cards. An illustrative list of 22 categories of industries has been announced. The list, however, is not exhaustive. Clarification of the details within the broad categories will be offered by the respective administrative ministries. Exceptional cases would be considered by the foreign investment boards.

The industries where no foreign collaboration, financial or technical, is permitted are:

1. *Metallurgical industries*—Ferrous: Ordinary castings, bright bars, structurals, and welded CI steel pipes & tubes.

Non-ferrous: Antimony, sodium metal, electrical resistance heating (nickel-free alloy), and aluminium litho plates.

2. *Electrical equipment*—Electric fans, common domestic appliances, common types of winding wires and strips, iron clad switches, AC motors, cables, and distribution transformers.

3. *Electronic components and equipments*—General purpose transistors & diodes, paper, mica and variable capacitors, T.V. receivers, tape recorders, teleprinters, P.A. systems, and record players/changers.

4. *Scientific and industrial instruments*—Non-specialized types of valves, meters, weighing machinery, and mathematical, surveying and drawing instruments.

5. *Transportation*—Railway wagons and bicycles.

6. *Industrial machinery*—Building and constructional machinery, oil mill machinery, conventional rice mill machinery, sugar machinery, tea-processing machinery, and general purpose machinery.

7. *Machine tools*—Forged handtools and general purpose machine tools.

8. *Agricultural machinery*—Tractor drawn implements, power tillers, food grain dryers, and agricultural implements.

9. *Miscellaneous mechanical engineering industries*.

10. *Commercial office and household equipment of common use*.

11. *Medical and surgical appliances*.

12. *Fertilizers*—Single super phosphate and granulated fertilisers.

13. *Chemicals (other than fertilisers)*—Acetic acid, acetanilide, ethyl chloride, viscose filament yarn/staple fibre, melathion technical, sulphate of alumina, potassium chlorate, fatty acid & glycerine, butyl titanate, warfarin, silica gel, lindane, endosulfan, phanthoate, nitrofen, ethyl ether, and plastipeel.

14. *Dyestuff*—Benzudune, o-toludine, carbozole, diaxazine violet pigment and cadmium sulphide orange.

15. *Drugs and pharmaceuticals*—Caffeine (natural), phenyl butazone, tol butamide, para acetamel, phanacetin, senna extract, diasogenin, clofibrate, 4-

hydroxy, cumarin, xanthopotoxin, calcium gluconate, choline chloride, scopolamine hydrobromide, niacinamide, ortholelyl biguanide, colchicine, diazepam, sorbitol from dextrose monohydrate, berberine hydrochloride, balladonna, acriflavine, calcium hypophosphite and chlorodisizpeoxide.

16. *Paper and pulp including paper products.*

17. *Consumer goods*

18. *Vegetable oils and vanaspati.*

19. *Rubber industries*—Viscose tyre yarn, metal bonded rubber, latex foam, rubberized fabric, and bicycle tyres and tubes.

20. *Leather/leather goods and pickers*—Belting leather, cotton & hair finished leather, pickers, picking bands, vegetable tanning extract, and fat liquors other than synthetics.

21. *Glass and ceramics.*

22. *Cement and gypsum products.*

[Source: E.T., 13.11.80].

Industrial Production

The production of a few selected industries during January-July 1980 is shown in the Table below. As compared to the corresponding period of 1979, there has been a marginal increase in the production of all the items except sugar, vanaspati, steel, aluminium and cement. There has been a heavy shortfall in the production of sugar which has come down from 45.3 lakh tonnes to 28.0 lakh tonnes. Similarly, cement production decreased from 111.7 lakh tonnes to only 97.8 lakh tonnes, and power generation has decreased from 6,234 crore/kWh to 5,984 crore kWh [*Econ Scene*, 1980, 5(10), 50].

Industries	Production in Jan/July 1980
Cotton yarn (crore kg)	61.6
Mill made cotton textiles (crore m.)	207.5
Jute goods (thousand tonnes)	675.2
Sugar (lakh tonnes)	28.03
Vanaspati (thousand tonnes)	206
Saleable steel (lakh tonnes)	34.2
Aluminium (thousand tonnes)	112.3
Cement (lakh tonnes)	97.8
Automobiles (nos)	
Car	16,454
Jeep	8,271
Commercial vehicles	36,510
Motor cycle	56,453
Scooter	1,24,500
Moped	52,049
Three-wheeler	15,027
Tractor	36,896
Power generation (crore kWh)	5,984

ENGINEERING INDUSTRY

Engineering Export

Engineering goods exports during the first half of the current year (April-September) have registered a 30% growth at Rs 321 crores as against Rs 251 crores during the same period last year.

The Engineering Export Promotion Council (EEPC) has projected a provisional target of export of Indian engineering goods at a level of Rs 2,450 crores in 1984-85 as against the target of Rs 915 crores for 1980-81 and the actual export of Rs 650 crores in 1979-80.

According to this latest projection, the commodity-wise exports will be: capital goods Rs 1,000 crores; steel and pig iron based items Rs 625 crores; the non-ferrous products Rs 75 crores; and consumer durables at the level of Rs 750 crores.

In 1979-80, out of the actual exports of Rs 650 crores, capital goods accounted for Rs 354.25 crores while the share of the steel and pig iron based items was Rs 139 crores. Non-ferrous metals based items' exports totalled Rs 21 crores and total consumer durables export was at the level of Rs 235.75 crores.

An analysis of the latest projection shows that Asia will be the main market of the Indian engineering goods in 1984-85 with the estimated exports put at the level of Rs 1,135 crores followed by Africa with Rs 550 crores. Similarly, the exports to Europe have been put at the level of Rs 470 crores and those to USA at Rs 225 crores.

In 1980-81, the export target of the Indian engineering goods to west Asia has been put at Rs 235 crores—the highest to any sub-region—and this trend will continue in 1984-85, with engineering exports rising to more than Rs 600 crores. Similarly, the exports to the south-east Asian nations are likely to go up from the level of Rs 235 crores in 1980-81 to Rs 525 crores in 1984-85.

According to an EEPC country-wise estimate, USA will retain its position as the leading importer of Indian engineering goods in 1984-85 with the exports put at the level of Rs 150 crores during the year from the level of Rs 62 crores in 1980-81. Among the east European countries, USSR is likely to double its imports of engineering goods from India from the level of Rs 37 crores in 1980-81 to Rs 78 crores in 1984-85 (E.T., 19.10.80; Hindustan Times, 12.11.80).

Light-weight Gas Torch

Manik Machinery Manufacturers Pvt. Ltd, Bombay, has designed a pilot gas torch for sheet metal work in garages and workshops. It is lightweight (only about 370 gm) and is convenient for handling in awkward and precarious positions as is common in pipewelding.

The pilot lightweight torch is supplied with tips needed for welding mild steel up to 4 mm thickness. Additional tips are also available for welding mild steel up to 8 mm thickness.

For further details write to the above concern at: 21 Sona Udyog, parsi Panchayat Road, Andheri (E), Bombay 400069 (F.E., 2.11.80).

Steel Forging Industry

At present, there are about 69 units in the organized sector engaged in the manufacture of steel forgings (all types) with a total installed capacity of around 2.1 lakh tonnes/yr. The total capacity covered by licences and by registration is 2.8 lakh tonnes/yr. In addition, a capacity of around 70,000 tonnes/yr has been allocated to different firms for creation of new capacity in India.

The production of steel forgings during the last 4 years was: 96,000 tonnes (1976), 94,800 tonnes (1977), 97,500 (1978) and 1.2 lakh tonnes (1979).

The current annual imports of steel forgings in rough and unfinished form are about Rs 40 crores. Import of forgings also takes place as part of phased manufacturing programme in the form of finished components by various industrial manufacturers. There is also scope for export of steel forgings which has now reached a level of about Rs 10 crores/yr. The anticipated demand by 1982-83 is expected to be around 4.8 lakh tonnes/yr.

Steel forgings play a key role in the manufacture of ships, automotive and earth moving equipment, industrial machinery, machine tools, chemical and fertilizer equipments, etc. [*Econ commerc News*, 1980, 10(41), 10].

Silicon Tester

A low-cost silicon tester is being manufactured in India. It is portable and simple instrument for the rapid determination of silicon contents in cast iron and uses the thermoelectric method of analysis. It can also be used as sortimeter for selecting or rejecting in-coming raw material not meeting the desired standards.

For details contact: *Toshniwal Bros Pvt. Ltd*, 3-E/8, *Jhandewala Extension*, New Delhi 110055.

CHEMICAL INDUSTRY

Aromatic Plants

Three aromatic plants to be set up in Cochin, Assam and Mathura in the near future will be internationally competitive despite higher capital costs compared to the existing American and European plants.

According to the report of the working group set up to study the feasibility and economics of the proposed aromatic complexes, higher aromatic contents of Bombay High crude would neutralize higher capital and costs involved in the conversion of the projects. Also, with the setting up of these plants, benzene, ortho-xylene and para-xylene produced can be marketed respectively at Rs 5000/tonne, Rs 5000/tonne and Rs 8000/tonne. This will also help in reduction of the price of other organic chemicals like styrene, phenol and caprolactam [*Chem Times*, 1980, 7(37), 1].

Oxo Alcohols

A new project (installed cap. 12,500 tonnes/yr) is being set up at Baroda (Gujarat) for the manufacture of oxo alcohols. The project has been undertaken

by Indo-Nissan Oxo Chemical Industries, a company promoted by Indo-Nippon Chemical Co. along with Nichimen Co. Ltd of Japan, Caprihans India and Gandhi Parekh Investment Corpn. Oxo alcohols are chiefly used in the manufacture of plasticizers.

The Company will obtain its requirements of synthesis gas and hydrogen gas from Gujarat State Fertilizers Co. and Gujarat Alkalies and Chemicals respectively. These gases will be piped directly to the Company's site. Commercial production is expected to commence by the middle of 1982 [*Chem Times*, 1980, 7(44), 15].

Ethylene from Ethanol

Japan Gas Corpn (JGC) has developed a successful, economically feasible process for the production of ethylene from fermentation of ethanol.

The catalyst used in the reaction is developed by JGC subsidiary, Nikki Chemicals, and has a high activity over 3 months. The yield is 97% and the catalyst can be used for around one year without regeneration in a commercial unit.

Both chemical and polymer grade ethylene can be produced by the process [*Chem Times*, 1980, 7(44), 2].

Catalyst for Sulphur Removal

The Indian Institute of Petroleum (IIP), Dehdra Dun, has developed, for the first time in India, a catalyst for the removal of sulphur from crude oil. The know-how for the catalyst has been licensed to a private firm and its commercial production is likely to begin in 2 years.

Unlike domestic crudes with low sulphur, the crudes imported from the Gulf countries have a sulphur content of about 2%. For the manufacture of petroleum products the sulphur content has to be brought down to 0.5%.

At present, the catalyst for sulphur removal from crude oil is being imported. The IIP catalyst will thus effect considerable import substitution.

Boric Acid Scarce

During the last 2 years the annual requirement of boric acid has more than doubled itself—it is more than 3,000 tonnes now compared to only 1,200 tonnes in 1977. As a consequence, there is a shortage of boric acid in the country and the open market price has touched an all-time high of Rs 16,000/tonne against the official price of Rs 9,000/tonne.

Borax Morarji Ltd, virtually the sole manufacturer of boric acid in India, has a licensed capacity of 3,000 tonnes/yr, but the unit is operating at 60-70% of its full capacity due to power cut and inadequate availability of the basic raw material, crude calcium borate.

The other manufacturer, Southern Borax Ltd, though licensed to produce 3,000 tonnes/yr, has not started production as yet. It is understood, that the unit is still in the pilot project stage [*Chem Weekly*, 1980, 15(1), 38].

Vanadium Recovery from Ilmenite

Travancore Titanium Products Ltd, Trivandrum, has developed a process for recovery of vanadium from ilmenite (raw material for titanium dioxide containing a very small quantity of vanadium). The process follows the sulphate route after the precipitation of hydrated titania by thermal hydrolysis [*Chem Times*, 1980, 7(40), 2].

Cholesteric Liquid Crystal

Djinji Industries Inc., USA, represented in India by Echbee Corpn, a major manufacturer of liquid crystal materials, has developed a new cholesteric liquid crystal, which has predictable temperature sensitivity between 0°C and 50°C.

Its applications are non-destructive testing such as detection of material discontinuities, bond or joint discontinuities, electronic component operation, stress-strain analysis and laminated and honeycomb structural integrity.

Its other applications are in clinical thermometers, toys, novelties, advertising, gas detection, holography, etc.

For details contact: Echbee Corpn, 38 Cawasji Patel Street, Bombay 400001 (E.T. 22.9.80).

MISCELLANEOUS INDUSTRIES

Cosmetics Export

The value of exports of Indian cosmetics, soaps and toiletries rose steadily from Rs 1.33 crores in 1963-64 to Rs 16.84 crores in 1979-80. Export figures for the last 4 years are presented in the Table below.

EXPORT OF COSMETICS, SOAP & TOILETRIES
(In Rs crores)

1976-77	11.43
1977-78	16.00
1978-79	13.83
1979-80	16.84

Lipsticks, nail enamels, talcum powder, medicated soaps, hair oils and original perfumes of non-spirituous origin are the main items which attract foreign buyers like west Asia, south-east Asia and Gulf countries.

There is a bigger market for Indian non-spirituous perfumes than spirituous perfumes. In 1978-79, non-spirituous perfumes worth Rs 85 lakhs were sold in overseas market. There is a good scope for perfumes made from distilled flower petals and other typical oriental perfumes. In many advanced countries, the best perfumes are those blended from natural and synthetic perfumes. India has good potential for such blending using natural aromatic herbs grown in abundance at home.

Some items like lipsticks, perfumes, nail polish are sent in bulk consignment to advanced countries for attractive packaging that can face competition from sophisticated rival brands. However, these bring less value realization to the exporting country [*Capital*, 15 Sept, 1980, 15].

Shoe Tacks Export

In less than 10 years, cut-hand shoe tacks manufactured by the tack and nails division of Gillanders Arbuthnot and Co. Ltd have gained popularity with shoe manufacturers in the south-east Asian countries, Bangladesh, Iran and a few other Gulf states. Exports now account for more than 50% of the production. Between 1972-73 and 1979-80, export of cut-hand shoe tacks increased from Rs 67,000 to over Rs 21 lakhs.

The market for shoe tacks in these countries was earlier dominated by European manufacturers and Gillanders, therefore, had to develop a competitive edge both in quality and price to make a foothold in the overseas market.

Indian Tack and Nail Co. Ltd was amalgamated with Gillanders in 1974. Following the amalgamation, cut-hand tacks and blued grooved upholstery tacks are marketed in India under a new brand name, Gilarco (E.T., 21.10.80).

Leather Goods Export

Bharat Leather Corpn has proposed a target for the export of leather and leather goods worth Rs 550 crores for the year 1982-83. This target is higher by Rs 150 crores than the foreign exchange earning from leather and leather goods during 1979-80.

The foreign exchange from the export of leather and leather goods has increased 4-fold within a decade. Total foreign exchange earnings from these goods increased from Rs 99.35 crores in 1971-72 to over Rs 400 crores in 1979-80.

A perspective plan drawn by the Corporation spelt out a number of measures in order to compete in the international market and specific schemes required to achieve the objectives.

The objectives comprised providing a sound infrastructure for the development of industry, setting up of vital institutions for training and development of manpower required for the future, and providing help and assistance to the industry in vital areas and ensuring coordination among the existing agencies (B.S., 1.11.80).

New Paraffin Plant

A new project for producing paraffin wax is being set up near the Madras refinery.

The annual capacity of the project will be 20,000 tonnes. The wax plant will get raw materials from the Madras refinery. Production of paraffin wax in the country in 1980 is estimated at 35,000 tonnes against 41,300 tonnes in the previous year. Digboi is the only wax producing refinery in the country.

In view of the increasing demand for paraffin wax, the government had banned its export in 1976 (E.T., 21.10.80).

TRADE ENQUIRIES

*Freed Co., 415, Central, N.W., P.O. Box No. 394, Albuquerque, New Mexico 87103, USA. The firm desires to import native silver jewellery.

*Le Jean International, P.O. Box No. 14504, Houston, Texas 77021, USA. The firm desires to establish business relations for two-way trade with reputed Indian firms.

*U.S. Export Import, P.O. Box No. 631, South San Francisco, California 94080, USA. The firm desires to establish business relations for import and export trade with Indian firms of repute.

*International Promotions Ltd, P.O. Box No. 25221, Chicago, Illinois 60625, USA. The firm desires to establish business relation with reputed firms in India.

*Lenox Foods Inc., 571 High Street, P.O. Box No. 413, Westwood, Massachusetts 02090, USA. The firm desires to establish mutually profitable business relations with reputed Indian firms.

*A.N. Patel, 63-65, High Street, Welling, Kent, UK. The firm desires to import steel, iron and other metals, coal, potato starch, etc.

*Vernon H. Cooper Ltd, Glaisdale Drive West, Bilborough, Nottingham, England NG8 4GH, UK. The firm desires to contact manufacturers of all types of knitted articles.

*Norfrig A/S. Hvam, DK-8620 Kjellerup, Denmark. The firm desires to export insulated and refrigerated bodies and ISO containers—used in the transportation of perishables and deep-frozen goods.

*Bernstein E Konard, Postlagernd 1, Nr. A038954, 850-Nurnberg, West Germany. The firm desires to import chess sets from semi-precious stones.

*EMM. Mavroyannakis & Co. EE, 85 Kalypsous, Callithea, Athens, Greece. The firm desires to export machine for mortar spraying.

*Aly Roushdi & Co., 13 El-Ghoria, El-Tougarya Street, Alexandria, Egypt. The firm desires to import all types of household goods and appliances as well as canned fruits and food-stuffs.

*Onis & Co. Ltd, P.O. Box No. 4503, Lagos, Nigeria. The firm desires to import building materials and hardware, sanitaryware, construction and agricultural equipment, telecommunication equipment, medical and surgical equipment, electrical appliances and accessories, anti-burglary equipment and fire fighting equipment, machine tools and tools, industrial fittings, ventilation and air-conditioning, chemicals, pharmaceutical products, office requisites, paper products and packaging materials, leisure and sports goods, upholstery and furnishing materials for the furniture industry, brassiers and girdles.

*R.A. Owo-Lewa (Nig.) Trading Co., 8-Idumagbo Avenue, Lagos, Nigeria. The firm desires to import hats, caps, watches, watch straps, garment, T-shirts, hardwares, brassiers, children wears, stationery goods, electrical goods, etc.

*Mofi Enterprises, P.O. Box No. 550, Victoria, United Republic of Cameroon. The firm desires to import L.P. records, cassette tapes, etc.

*C.I. Mbaduigha & Sons, P.O. Box No. 253 Buea, South West Province, United Republic of Cameroon. The firm desires to import all kinds of dresses and other readymade garments.

*Al-Quaser Store, Shaikh Abdulla Road, Manama, Bahrain. The firm desires to import leather goods such as waist belts, sandals, shoes, and other products.

*Saudi Arabian Corporation, P.O. Box No. 832, Mecca, Mukarrama, Saudi Arabia. The firm desires to import all types of electrical goods, building materials, household wares, footstuffs, toys for children, readymade garments and general merchandise.

*Dehlawi Steel Factory, P.O. Box No. 2141, Mecca, Saudi Arabia. The firm desires to import guillotine shears and power presses for their steel furniture factory.

*Abdul Aziz Abdullah Al-Ajaen Trading Est., P.O. Box No. 8373, Riyadh, Saudi Arabia. The firm desires to import electrical goods, building and sanitary materials.

*Madi Al Madi Est. for Trading, P.O. Box No. 5855, Riyadh, Saudi Arabia. The firm desires to contact manufacturers and exporters interested to market their products in Saudi Arabia.

*Ibrahim Abdullah Mohamed Wali Est. for Trade P.O. Box No. 7923, Balahmer Building, Floor 7, Flat No. 68, Bab Sharif, Jeddah, Saudi Arabia. The firm desires to import childrenware, cotton dress and other readymade garment, furniture, utensils, household articles, paints and building materials, decolum furniture, foam mattresses, electrical home appliances, electrical accessories, etc.

*Al Naja Trading Co., P.O. Box No. 6505, Abu Dhabi, United Arab Emirates. The firm desires to import sport goods, agricultural equipment, furniture, stationery, electrical items, musical instruments, home appliances, readymade garments, children's toys, garden equipment and also interested to collaborate with Indian firm in tenders business, etc.

*Barwais Supplying & Trading Establishment, Al Najdah Street, Abu Dhabi, United Arab Emirates. The firm desires to import woollen clothes, ladies undergarments, kraft paper, manure, uniforms, etc.

*Ery Plast Ltd, P.O. Box No. 3123, Tehran, Iran. The firm desires to import plastic raw materials such as high density polyethylene for producing bottles and other containers.

*Bazorghani T. Sarmadi, Avenue Ferdowsi, Manutchehri Street, Jandark Alley, No. 3-4, Tehran, Iran. The firm desires to import welded steel profiles in different sizes.

*S. Dahmobe, Ferdowei Avenue No. 496, Tehran 11, Iran. The party desires to import chromed bottle traps for sinks and wash basins, stainless steel sink, acrylic sheets, icecream maker machines for making different kinds of icecream, glass products, disposable syringes, etc.

*Ceyhaus Limited, P.O. Box No. 1857, Colombo, Sri Lanka. The firm desires to import dolomite (in rock form).

ANNOUNCEMENTS

AWARDS

ASSOCHAM Awards

The Associated Chambers of Commerce and Industry of India (ASSOCHAM) invites nominations from companies, other organizations and individuals for the following 4 awards: (i) consumer protection and service through an appropriate distribution network, (ii) import substitution through indigenous R&D, (iii) promotion of rural and agricultural activities, and (iv) promotion of ancillary industries through self-employed entrepreneurs in small scale sector.

Nominations to be received by 31.12.80.

For further details contact: Secretary, ASSOCHAM, 17 Parliament Street, New Delhi 110001.

VASVIK Awards

The Vividhlaxi Audyogik Samshodhan Vikas Kendra (VASVIK) award has been given to 2 scientists in 1978 and 15 in 1979 for their outstanding contribution in various fields of science and technology.

SEMINARS

Indo-Arab Seminar

A specially designed seminar for exploring the possibilities of boosting Indo-Arab trade projects, consultancy services and OPEC investment in the various Indian projects under the new policy of the Govt. of India will be held at Taj Mahal Hotel from 20 to 21 December, 1980.

For full details write to: Indian International Trade Centre, 59 Nariman Bhavan, Nariman Point, Bombay 400021.

Cold Storage Industry Seminar

The National productivity Council, Chandigarh, in collaboration with the Institution of Engineers, Chandigarh, and Punjab Agricultural University (College of Agricultural Engineering), Ludhiana, is organizing a regional seminar on cold storage industry at the Institute of Engineers, Chandigarh, on 16-17 December 1980.

EXHIBITION & FAIRS

Industrial Exhibition

The 41st All India Industrial Exhibition will be held from 1 January to 10 February 1981 at Hyderabad.

For further details contact: Hony Secretary of the above exhibition at Mukarram Jahi Road, Hyderabad.

Consumer Goods Fair

The Trade Fair Authority of India will be organizing the National Consumer Goods Fair from 13 to 31 December 1980. The Fair will display wide-ranging products of household utility.

India International Trade Fair

The Trade Fair Authority of India (TFA) will be organizing India International Trade Fair at Pragati Maidan from 14 November to 4 December 1981.

The Fair will project the all round progress made in the field of industry, agriculture, trade, science and technology.

For further details write to: TFA, Pragati Maidan, New Delhi 110001.

TRAINING

Project Management

The Asian Development Bank, Asia Productivity Organization and the National Productivity Council of India will jointly hold a training course in project management, with particular reference to development of village and small industries at New Delhi and Bangalore in November-December 1981.

Industrial Relations and Business Management

Xavier Labour Relations Institute, Jamshedpur, invites applications for admissions to 2-years course in above-mentioned subjects.

Last date for issuing forms is 20 December 1980. Completed applications must reach the Admission Office on or before 31 December 1980.

Reliability Engineering

The Delhi Productivity Council (DPC) is organizing a 5-day training programme from 16 December 1980 on above topic for executives from design, production, quality control, inspection, maintenance, testing and after sales services.

Venue: Hotel Maurya, New Delhi.

For further details write to: Executive Director, DPC, 1-E/2 Jhandewala Extension, New Delhi 110055.

ENERGY SOURCES: A SELECT BIBLIOGRAPHY

Shri M.M.S. Karki of the Industrial Information Services Section of Publications & Information Directorate, New Delhi, has prepared one mini bibliography on renewable energy sources. It contains about 140 references on biomass, hydrogen, solar, tidal and wind energy. The bibliography in general covers the 1977-80 period. However, in case of biomass and solar energy, year 1977 has been excluded. An index and a list of periodicals referred to are also appended.

The Bibliography can be obtained from: Scientist-in-Charge (IIS), Publications & Information Directorate, New Delhi 110012.

PUBLICATIONS

Sales and Marketing Management—Concepts and Cases by Asghar A. Karim; Karim and Associates, 4 Sheppherd Road, Bombay 400008. pp. 289. Price Rs 95.

The Book is divided into 3 sections. The first section has 10 chapters dealing with various types of marketing—conversional-, stimulated- and developmental-marketing, remarketing, synchro-marketing, maintenance-marketing, demarketing and counter-marketing.

The second section gives details of product development, distribution channels, advertising and sales promotion and pricing. The appendices deal with return on time invested grid for sales excellence, mark up and mark down concepts, marketing research, and how to evaluate one's job. The last section consists of 17 case studies (F.E., 2.11.80).

Role of Industrial Estates in a Developing Economy by R.L. Sanghvi; Multi-tech Publishing Co., Bombay. pp. 285. Rs 75.

The Book under review appraises the national effort in rural industrialization through industrial estates. It is primarily based on a field survey of some industrial estates in south Gujarat. It has carefully discussed the characteristics of industrial units and the industrial development attained by these units, the dispersal of industrial units, the balancing of regional development sought through these units, their efficiency, their operational problems, a general cost benefit analysis of industrial estates, etc. and concludes with a chapter entitled "Summary, conclusions and recommendations".

The Book provides important statistics on different aspects of the estates under study. The difficulties experienced by the units in the form of shortages of power, raw materials, skilled labour, market, finance, technical advice, etc. need to be looked into by all interested in the planned development of our economy. Some of the author's findings, e.g. that urban estates are more successful than rural estates, that economic benefits from the estates quite often do not accrue to the region where they are located, that industrial dispersal can be achieved through clustered industrialization, and that pre-investment techno-economic services are needed, etc. merit conscientious consideration by our planners [*Econ Scene*, 1980, 5(10), 49].

The Architectural and Building Directory of India—1980, Compiler: Peter Gomez; Business Press Pvt. Ltd, Surya Mahal, 5, Burjorji Bharucha Marg, Fort, Bombay 400023. pp. 385, Price Rs 60.

The Directory gives names, addresses and certain other details about architectural firms, contractors, manufacturers and dealers of building materials and equipment, firms providing such auxiliary services as security, transport and pest control, estate agents and exporters of products and services. A separate section on books and periodicals and book notices enhances the utility of the publication (F.E., 7.9.80).

